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CONTENTS

Observations of a Man from Main Street 390
Leakage of the Ingluvies in a Rooster 397
Further Studies of the Lacto-Vaccine in Mastitis 398
Tuberculosis in England and Wales 400
Pertaining to the Eradication of Bang's Disease 401
Not all Tri-Colored Cats Are Females 402
Experimental Studies in the Transmission of Swine Erysipelas 403
Must Control Livestock Diseases at All Times 407
Drought-Injured Sudan Grass and Sorghum Dangerous Feed 407
New Veterinary Police Measures in Illinois 407
Sheep Troubles 408
Chloroform Anesthesia in the Cat 416
Do You Remember? 418
Can You Answer These Questions? 418
C. P. Fitch New President of the A. V. M. A. 419
Action of Expectorants 429
Vaccines in Bang's Disease 430
Diseases of Game Birds 430

No. 10
VOL. XXVIII

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Parasites, external and internal, damage their hosts by mechanical injury, by direct abstraction of nutrition, the sucking of blood, by elaborating and eliminating chemic substances that cause local irritation, hemolysis, and other injuries to the tissues and by acting as carriers of microbian infection. Thus parasites are frequently responsible not only for unthriftiness and loss of flesh, but also for acute or chronic bacterial and virus diseases and for loss of life.

Grove reported the successful use of antimony and potassium tartrate in a case of trichinosis in the human, in *Journal of the American Medical Association* (Vol. 85, No. 5). In this case, a 2% solution of antimony and potassium sulphate in sterile water was injected intravenously. The dosage consisted of 1 cc followed in 24 hours by 2 cc and 48 hours later 3 cc was administered. This same therapeutic agent has been recommended by Rogers in cases of kala-azar. This method may be of value in the treatment of pulmonary ascaradiasis, oesophagastomiasis and other forms of parasitism in which the parasites invade various tissues. Practitioners should try this method of treatment and report their results. A similar preparation is being used to some extent in the treatment of filariasis in dogs and excellent results have been reported.

Hart and associates of the University of Wisconsin, by adding copper and iron salts and manganese to milk have rendered it capable of supporting life for long periods, thus making it an even more nearly perfect food than is natural milk.

Mineral supplements are of value when there is a deficiency of minerals in the feed. The usual deficient elements are iodine, phosphorus and calcium. These may not all be deficient in the same feed. The progressive veterinarian will determine the specific deficiency and supply it in proper form rather than prescribe prepared mineral compound that contains a variety of unnecessary and, in some instances, expensive ingredients.

According to Hastings, anthrax spores may remain viable and virulent in naturally contaminated water for 18½ years. The test was made on a sample of water that had been polluted from a tannery. This sample of water was kept in a glass stoppered bottle and subjected to the varying temperatures in a laboratory. If spores of anthrax bacilli will remain viable and virulent for 18½ years under the conditions described in Hastings experiments, it is probable that they will live indefinitely in soil and that anthrax will become more widespread as new areas of infection are established.

The explorer Rasmussen once drove 94 miles with dog sledges in one day.—*S. N. L.*, 24:640.

At a hospital for animals in New York City, 50% of the operations are for the removal of tumors and one-third of these prove to be cancer.—*S. N. L.*, 24:640.

In a series of experiments conducted by Eckles and Williams to ascertain the value of yeast as a supplemental feed to producing dairy cows, they found that the addition of 25 grams of commercial dry yeast daily for each pound of milk produced did not increase the milk or butterfat yield.—*Dairy Science.*

Involution forms occurring in bacterial cultures were formerly considered as reversion or degenerate types induced by environments that were not favorable to normal fission. It has been shown recently that the various stages of the process of the development of involution forms parallel the process of isogamic conjugation or zygospore formation that occurs in many of the yeasts. It has been demonstrated that these involution forms of some bacteria especially the colon-typhoid and diphtheric will germinate when provided environments. In some instances the progeny of involution forms may acquire new characters or latent characteristics may be rejuvenated. Thus many intricate problems of infection may be revealed.—*Jour. Bact.*, Vol. 10, No. 5.

R. E. Ferneyhough, Warrenton, Va., has a way of his own in taking cultures from the cervix and uterus of the mare. He uses a sterile swab in a sterile tube. When he is all ready, he uses a large uterine or cervical forceps to grasp the free end of the stick and passes the swab end just where he wants it. He puts the swab back in the sterile tube and sends it to the laboratory. We find his cultures most satisfactory to examine and believe it is the most practical way we have yet seen so we recommend it to others.—*The Practitioners Bulletin.*

Whale meat which tastes very much like beef, is a standard meat in Japan.—*S. N. L.*, 24:641.

Still another hormone of the pituitary gland has been discovered, one that exercises control over the thyroid. French scientists have reported that they have produced exopthalmic goitre in human beings by doses of this hormone.

Smallpox vaccine virus from chicken eggs instead of from calf lymp is the achievement of Col. W. D. H. Stevenson and Dr. G. G. Butler of the British Government Lymph Establishment. The new method opens the possibility of large scale production of a bacteria-free virus for vaccination, it is claimed. From twenty-eight eggs the investigators obtained enough material to vaccinate seven thousand persons. The method is not as arduous or expensive as the production of calf lymph. The method seems to represent a definite advance and to be free from the objections to which calf lymph is open.—*S. N. L.*

As a result of experiments conducted by L. F. Badger, U. S. Public Health Service, it was concluded that dogs are susceptible to the virus of Rocky Mountain spotted fever.

Ordinarily no fever or other symptoms of infection were exhibited by adult dogs, but the blood of dogs inoculated by intraperitoneal injections or by the bite of ticks —*Dermacentor andersoni*—remained infective from the second to the eighth day after inoculation and it was shown by appropriate experiments that there was multiplication of virus in the blood of the dog.

Puppies inoculated with the virus of Rocky Mountain spotted fever suffered a transient pyrexia, cough and exhibited other clinical symptoms of spotted fever. They recovered without treatment.

It was shown in the same investigation that sheep also are susceptible to the virus of Rocky Mountain spotted fever, reacting to inoculation much as do dogs.

Tularemia is transmissible to man by blood sucking flies and ticks that are infected with *B. tularense,* the causative agent.

The prevalence of xerophthalmia in children is in indirect proportion to the consumption of butter fat—vitamin A. The use of butter even though higher in price than substitutes is therefore justifiable.

A health commissioner has said that the death rate in Chicago (already the lowest for any large city) could be reduced one-sixth if smoke were eliminated from the city air.—*S. N. L.,* 24:641.

The *Spirochaeta* (Treponema) *pallida* probably does more damage to the health of more people than any other organism. Of 40,178 specimens received at the laboratory of the Illinois Department of Health for examination, 20,690 were for the purpose of having tests for this organism made, and it was detected in 4,466 instances.—*Illinois Health Messenger.*

Twenty-one outbreaks of epidemic diseases in Illinois have been traced to contaminated milk in the last ten years. All were traced to raw milk supplies. Eighty per cent of the approximately 220 million gallons of milk consumed annually in Illinois is pasteurized and this part of the milk supply has been responsible for no outbreaks of the milk-borne diseases in that state in a decade.

Dr. Seale Harris, Birmingham, Alabama, has reported a new disease in that locality. The condition is the opposite of that of diabetes, in which the pancreas supplies too little insulin for the body needs. In the new disease the pancreas produces too much insulin and excessive hunger is the chief symptom. The patient may suffer also from weakness, nervousness, tremors, sweating and mental lapses. The treatment advised by Doctor Harris is a diet low in carbohydrates and high in fats for mild cases, and surgical removal of a portion of the pancreas for the more severe attacks.

Dr. John Rurah of the Johns Hopkins University, concludes as a result of prolonged research that anterior polio-myelitis existed in Egypt 4500 years ago.

The function of the spleen has been a moot question for many years. The production of certain blood cells and purifying action upon the blood are known splenic functions. Recently it has been suggested that the spleen is an important source of antibodies and possibly also of products that antagonize the development of tumor cells.—*Science.*

State Health Officer Baker of Alabama, has just announced the perfection of a new protective toxoid for the prevention of diphtheria. With the old toxoid, it required three injections a week apart to secure adequate protection against diphtheria. One injection of the new type toxoid will immunize 95 to 98% of those susceptible.

The agglutinating property of the pneumococcus is, according to Falk, Jacobson and Gussin, an indication of their pathogenicity. These investigators assumed that agglutination was determined by electric voltage between the pneumococcus and suspension fluid and they devised an ingenious method for measuring it. Thus by this test these investigators have made it possible to give a rather accurate prognosis in the early stages of pneumonia.—*Science,* 1635.

It is probable that cancer is a modern disease. No reference to cancer has been found in ancient medical history neither has there been any indication of cancer observed in mummies. It has been suggested that inter-racial marriage may have caused some disturbance in cell development in the cross-breds that has resulted in cancer formation. Cancer mortality is increasing at an alarming rate in some localities and the cause has not been determined. Strong in the Journal of Cancer research states that it is not possible to state whether cancer mortality in the United States is increasing or decreasing, but that it is not changing materially.

Observations of a Man From Main Street

By HOMER ALVIN WILSON,
Jefferson City, Missouri

Being pertinent remarks on foibles and follies of live-stock disease control, regulatory measures and regulatory men, with just a kindly reference to politico-agriculturists, and scrapping amongst veterinarians.

HAVING been born and reared near and later having lived in the type of town so well described by Sinclair Lewis in his book "Main Street," I am essentially still a small town man and am proud of the fact that I not only have the ways but the viewpoint strictly characteristic of the small town.

In reviewing the events of the past fifteen or twenty years, it is certainly obvious that the small-town man has held his own with the so-called "big business man." We have always heard the bigger they are the harder they fall. Out of the recent crack-up, small-town people have fared better than the big-town people. One does not hear the expression now, as he formerly heard so frequently, "small town talk." No man need be ashamed of living in a small town, and certainly need not hang his head because he came from one. Like most other small-town people, I am a cynic in its broader sense—in general, cynicism is nothing more nor less than a branch of Greek philosophy, which taught virtue, self-control, and contempt for convention were the essential attributes of life.

Much to my surprise, on a crisp January day in 1922, out of a clear sky, came the offer of the position of State Veterinarian of my native state. It was a surprise, because I had never seriously entertained any ambition to fill that office and had made no application for the job. I did not know why my services were being sought, but, after I accepted the appointment, I found out—for then as now, there were a host after the job, bothering and pestering everyone from the Governor of the State to the guards in the Capitol Building, so the State Board of Agriculture thought it best to set the whole string on the passing track and select a locomotive which had not been standing under a full head of steam with bell and whistle going.

In a mental state akin to that of the life long sinner that "jines church" while under the spell of a fluent but insincere evangelist, I took the bait. After taking the oath, the seriousness of my predicament dawned upon me. I was succeeding a man of international fame, who had been in the state regulatory work for twenty years, and who had established for himself an enviable reputation as being one of the clearest-thinking, capable state veterinarians in the Union—a fluent public speaker, a fine personality, and a student in every sense of the word. I allude to the venerable Doctor David F. Luckey, who resigned as State Veterinarian of Missouri January 1, 1922.

I have no apologies to offer myself, nor anyone else, when I strongly confess that Doctor Luckey was a much better State Veterinarian than I have been, and I will go one step farther and say that he will go down on the record in years to come as being the best State Veterinarian Missouri ever had.

The work was entirely new to me; nothing like it before had ever entered my young life. I made mistakes, I made blunders, but I shall at least give myself credit for having enough sense to repel all efforts on the part of partisan politicians to divorce from me the trained and faithful, as well as competent, office employees who had worked for Doctor Luckey. For the

first twelve months or longer, I relied upon them for working out details of the job; they are still attending to those details, as I have never found time to worry my head over them.

I arrived in the office just as the great program of tuberculosis eradication of the Federal Government in cooperation with the different states was beginning to gain momentum. Like every other man who had been engaged in general practice I knew little about bovine tuberculosis. I did not even possess opinions—simply had to fall in with the crowd and do the goose-step with the rest. Like other state employes cooperating with the Federal Government, I am still goose-stepping; on account of practically no appropriations on the part of the State, I am playing the rôle (as I have been for a number of years) of lame duck, which term at the time of this dictation dawns upon me with greater force than ever, because as an office holder I am also a "lame duck."

Tuberculosis Eradication

From my observations I must sincerely say that the tuberculosis eradication program which has been in force now over a decade is one of the most constructive and useful, as well as humanitarian projects ever undertaken by the Federal Government. It probably has done more to awaken and educate the American people, from those residing in the largest of cities down to the smallest farmer, than any other public movement ever started. It did more to bring to the attention of the American people the necessity of trained veterinarians than any other one thing could possibly have done. It has always remained a mystery to me just why a certain minority of practicing veterinarians actually opposed the program, while others accepted it in a luke-warm spirit. The explanation seems to lie in the fact that they were not permitted to participate in the program in an active manner and draw compensation for their services. To a degree, that was a mistake on the part of the Federal and the different state governments early in the game.

It will be recalled that the earliest activities on the part of the Federal and state governments consisted in the promotion of accredited herds. In my opinion, the accredited herd plan is the most constructive, as well as the most lasting, of any plan undertaken to date.

The modified area plan has its virtues. Its chief virtue lies in the fact that all herds in a county are tested. Theoretically, it positively eradicates tuberculosis on a wholesale scale; practically it does not, and, furthermore, it does not even control it. I expect modified-area-plan enthusiasts to attack me on that statement, unless they consider the small-town source and pass it over; however, I have no apologies to make and am quite sure I can back up my statements anywhere, any time. My chief reason for making such a statement is this: After a county is once clean, in order to keep it clean, it becomes necessary to enforce iron-clad rules as to the entry of cattle into that county. Under the present methods, the transportation and quarantine regulations are mere scraps of paper, unless they are backed up by an adequate police system. Perhaps a few states have such a system, but I am quite sure that no middle-western state has attained such efficiency to date. If dangerous criminals are permitted to run at large and shoot down officers at cross-roads; and in the shadow of one of the largest railroad stations in the country, conduct a wholesale slaughter of Federal and local officers and get away with it, is it reasonable to suppose we going to prevent some fellow with an old truck from hauling a cow down the highway?

On the other hand, how are we going to prevent a trader from driving one or more cattle across a state line or a county line? Present day quarantines are like Lincoln said about one of his generals: "A success on dress parade, but in field service a failure."

Furthermore, there is a tendency to want to relax, as exemplified by the action of the recent legislature in Missouri, which passed a law granting any man the right to go into a public stock yard, make an

affidavit that the cows which he purchases are to be used for feeding and grazing purposes, and take them home. As to just how the new state Agricultural Department will check up on those shipments with the small appropriations available for this present biennium is indeed a perfect mystery to me.

The reason that I am strong for Federal and state accredited herds is: (1) Only the most progressive type of cattle owners want the accredited herds. (2) Each man is placed upon his individual honor to enforce, for his own benefit, necessary regulations to protect his herd, and all additions to such herd must pass satisfactory tests or come from herds in good standing. And, (3) in order to maintain such a standing the owner must employ a reputable veterinarian to test that herd annually. I fully believe, if the accredited herd plan had been pushed to the limit and dairymen encouraged to take it up, and then the different cities had enforced the requirement that milk must be supplied from accredited herds or herds in the process of accreditation, the millions of dollars that the T. B. eradication project has cost would have been spent to better and more permanent advantage.

It remains to be seen what the final outcome of the vast T. B. eradication program will be. So far as Missouri is concerned, I do not say the project is dead, but, I think its heart is weak. After about fourteen years of hard work on the part of my predecessor and myself to obtain appropriations, the glorious achievement of accrediting less than twenty-five per cent of the area of the state has been accomplished. If we could have continued at that rate, then in forty-two years Missouri could have stuck out its chest, reared back on its hind legs and yelled "modified accredited state." But with a decrease of more than 50% in appropriations, and with prospects of further decrease to come, a very conservative estimate will be about one hundred sixty years, during which time there will have been many wars and rumors of wars—and perhaps, who knows, a new disease discovered by the scientists will have befogged the age-old scourge of tuberculosis.

Hog Cholera Control

Whenever I read any statement from a public official, be he Federal or state employe, on the subject of hog cholera control I know not whether to laugh, cuss, or cry. I am like the boy who looked at the zebra in the zoo: "There ain't no such animal!" Such literature makes fine reading; it inspires lofty ideals; it makes one proud of his profession when he reads where some state official has issued quarantines and ordered this, that, and the other thing done, and suppressed a huge outbreak of cholera which was sweeping the prairies like a wild fire, and did it all within a period of thirty or forty days. It is true that some states either do have, or have had, laws which were conducive to control of hog cholera on the part of the state officials. In the middle-west it is a different story. Our laws, if anything, instead of assisting to control hog cholera actually invite its dissemination. How can a disease be controlled by a state department when the laws of that state permit the promiscuous sale of the virus to even the most ignorant of men? The only weapon at our disposal is the so-called quarantine, and in most cases handing the owner the joker from a deck of cards would serve the purpose equally as well as handing him a formal quarantine notice. It appears to me to be only a question of time when swine practice will be beyond the reach of the profession. It is fast drifting into the hands of commercial serum makers and jobbers, who peddle not only anti-hog-cholera serum and virus, but every type of biological preparation used in veterinary practice. Finding the graft a good one they have now entered the field of medicinal preparations. One can read in any farm paper advertisements of a highly concentrated solution of lye, nicely colored and pleasantly perfumed, retailing at anywhere from three to five dollars a gallon, sold and guaranteed not only to prevent, but to cure "necro." Mark my predictions that ere long there will be

firms in Kansas City selling an alkaline powder for the cure and prevention of shipping fever (whatever that is) in cattle, simply because there were some experiments conducted in the Kansas City Stock Yards with sodium bicarbonate in the treatment of said shipping fever in calves. The experiments proved somewhat satisfactory, but I see nothing in the results to make the patient go into a head spin, tear up the sheets, and leap out the window of the fourth ward.

That is one trouble with the whole medical fraternity. Some fellow tries something—it works. He rushes to a newspaper office and in his excitement he makes a few incoherent remarks to the cool-headed editor who draws upon his own imagination and journalistic training and makes the story complete. Then there is a stampede, and off they go, over the hill and far away. A fine illustration of what I mean is seen in the case of calcium mixtures used in milk fever. They do the business; and now they are being advertised for everything from seedy-toe to carbolico-oompholitis, the "new" disease discovered on the Pacific coast three or four years ago and which is said to be becoming prevalent among snolligosters in that region. Thirty states have already enacted severe and effective quarantines in the form of regulations against the disease, which will soon be lifted if the results of the calcium treatment prove as expected.

Back to hog cholera control, the only official way I see to handle it, under present conditions, is just as the grandmothers of pioneer days handled an outbreak of measles—let it run its course. Theoretically it is a reportable disease. When an outbreak occurs Federal and state officials should be rushed to the scene armed with butcher knives, quarantine blanks, and all other such paraphernalia. From a practical standpoint it should be, like it is in many places here in Missouri—just another event in the life of a busy practitioner.

Just about enough said on hog cholera. Its solution lies in taking virus away from farm bureaus and other farm organizations, shearing extension workers and teachers of their power to meddle, clamp down on the serum peddlers, and educate farmers to the necessity of competent veterinary assistance, and, last but not least, educate the veterinary profession to look for hog cholera instead of everything else under the sun when they see a hog backed up in the corner of a pen with his back arched and his tail hanging straight down. Benjamin Franklin once said "take care the pennies and the dollars will take care themselves." I am not trying to put myself in the class with Ben, but my motto is "take care of hog cholera first and attend to the secondary diseases next." Perhaps I should knock on wood, but I have the first time to be guilty of letting a drove of hogs die of the cholera, while trying to defeat some other disease.

While I am on the subject of hog cholera I think I should say a few words about the veterinarian and the use of serum. I have always been a stickler for scientific technique in the operation of injecting serum. It is impossible to be too clean. The veterinarian who withdraws from his satchel a bunch of dirty syringes plus a serum bag which is sufficient in its appearance to nauseate the hog himself, let alone the owner, is certainly not going to create a favorable impression. Regardless of how clean the equipment may be on the inside, if its outward appearance is unsatisfactory an unfavorable impression is bound to be created. A professional man in all his operations should certainly outdo the layman who has had no training whatever. I have often been extremely disgusted in attending veterinary conventions and listening to arguments on the part of practitioners. I distinctly remember one convention where the subject of technique came up for discussion. Certain members seemed to be of the opinion that the instruments and the equipment should be kept scrupulously clean but it was wholly unnecessary to apply any sterilizing or cleansing agent to the site of injection; while others argued that sterilizing the site of injection was the secret of prevent-

ing abscesses upon a wholesale scale—the instruments would be mechanically (!) cleansed after a dozen or so hogs had been treated. What is the use of going half way? Why not start clean and wind up clean?

Regulations

Regulations for the control of animal diseases are necessary as well as useful. In the past, when over 90% of all transportation of livestock was made by rail, they were in most cases wholly effective. Whatever one may say about the railroad he must admit that, with few exceptions, they have cheerfully complied with state and Federal transportation laws. The majority of violations were due to ignorance of a local station agent out in some little town at the point of origin; and they in numbers did not compare to the wanton violations on the part of a certain few shyster members of the profession who would sit in their offices and write a health certificate on something they never laid eyes on.

With present methods of transportation, regulations are not nearly so effective. In fact, in states which do not have large appropriations and employ snoopers and inspectors, they are in the main a failure and will remain so until the whole motor-trucking industry is under the iron-hand by the Interstate Commerce Commission, as well as state public service commissions. Even then violators will be more common than were observed in the days of railroad transportation.

In some respects I do not blame the people for attempting to violate regulations for the interstate shipment of live stock. The regulations of many of the states, especially the eastern states are unwarranted and unreasonable. Such regulations are not enacted solely with a view of preventing entrance of diseased animals. They are, in my judgment, in part, nothing more nor less than illy-designed schemes to protect a home industry. I am looking forward with keen anticipation to the day when the cattle breeders of this country will have sufficient—ah, intestinal fortitude to employ a high-powered lawyer to file injunctions (and don't think that some Federal judge will not grant such an injunction when it is attempted) to blow up the works.

The State of Missouri, years ago, tried to enforce an interstate regulation, but a decision from Kansas City Court of Appeals nullified its efforts. In brief the status is this: "No state has authority to control interstate commerce. It shall have no regulations more drastic than that of the Federal government." The most a state can do is to resort to quarantine of the shipment when it arrives within its borders; then it is doubtful even if such quarantine be legal when the shipment entered the state in conformity with the laws of the highest authority of the land. No state can legally draft a regulation or enact a law more binding than that imposed by the Federal government. To attempt to do so is more or less a display of asininity on the part of the enacting body, whether it be an individual or a group. Regardless of what their shortcomings may be, we must in fairness recognize the United States Bureau of Animal Industry as the most efficient and best qualified live stock sanitary organization in the country; that is not open to question. It has been settled by deeds. They require a tuberculin test on dairy and breeding cattle going interstate, such test to be conducted by an approved veterinarian, with the exception of cattle from accredited herds and modified accredited areas in good standing. Yet there is less than a handful of states which will permit the entry of cattle from modified accredited areas without a test. A lot of states demand that cattle imported without a test must come from accredited herds, or herds from accredited areas which have been tested within the preceding twelve months and pass another test just prior to shipment. Thus making it impractical to ship cattle into those states unless they actually come from accredited herds—another great argument in favor of said accredited herd mentioned above. Such requirements

not only admit the failure of modified area control, but actually slap members of the profession in the face, as they deny the results of a test the government approves, unless it be made upon theoretically foolproof animals.

So far as safety is concerned, I would rather go into some of the southwestern states and buy cattle out of a county in which there has been practically no testing whatever than to go into any state where from 40 to 80% of the cattle in whole townships were condemned upon the initial test, and where cattle are housed in age-old basement barns with cobblestone floors. Now some fellow is going to declare that the cobblestones have all been covered with concrete, Armstrong linoleum, or cork brick—I am from Missouri—show me.

I have observed for years that after each election a brand new crop of regulations come into being throughout the great length and breadth of the land. Each new official wants to change something, especially in those states which have a commissioner form of agricultural supervision. It is so easy for a commissioner to dictate a new edict—much easier than it is to get something passed by a cool and level-headed Board of Agriculture or Live Stock Sanitary Commission. Commissioners remind me of a woman moving into a new apartment—they like to change things around, but they usually find that they do not work as well as where they were originally placed. It is often observed among such high officials as presidents and governors, that they all come into office with a new legislative program. It has been so for fifty years. I have often wondered why such eminent men do not recognize that they belong to the executive and not to the legislative branch of government, and therefore iron the wrinkles out of the old garment instead of attempting to make a new one. It is not surprising that all branches of government have become top heavy, extravagant, and impossible to support. It is little wonder that one out of each twenty persons in the United States has his proboscis stuck deeply into the public treasury.

Veterinarians a Subordinated Group

There is no use for anyone to deny that the veterinary profession by law and in practice is being subordinated to politicians. With few exceptions, veterinary police officials in this country are acting under orders from higher-ups. Take as an illustration the average state agricultural regulatory department: It is either an agriculture board with an executive secretary or it is worse—an agricultural commissioner, in most cases appointed by the governor. The veterinarian, whether he be designated State or Chief, is an employe—just a high class hired man with little discretionary authority. In many cases he is forced to adopt policies and do things which are not only repulsive to his professional ethics, but at the same time are against the grain of his professional judgment. The average agricultural secretary or agricultural commissioner knows almost as much about livestock problems and agricultural problems as he knows about Professor Einstein's theory of relativity. They are usually selected from the ranks of newspaper men or just political workers without any basic foundation or essential qualifications for the position, and, in some cases, are not even in sympathy with the agricultural industry. They know even less if that is possible about veterinary medicine. Their idea of a veterinarian is some fellow extracting a perfectly sound molar from the jaw of a horse. It is easy to understand why such men fall for the county-agent plan of hog cholera control. I marvel that tuberculosis eradication has remained in the hands of the profession as long as it has. Even in the case of our own most efficient United States Bureau of Animal Industry it is noticed that all important regulations are signed by the Secretary, not by order of the Chief.

I know nothing about the connection of the different veterinary schools with the different state universities, but presume the same situation exists to a greater or

lesser degree, as they are probably being controlled by agriculturists. Take the army as an example: Notwithstanding that the A. E. F. had a veterinary corps with an eminent Chief Veterinarian and along down the line, corps veterinarians, division veterinarians, and regimental veterinarians, in few cases could we look to our superior veterinary officer for orders

H. A. Wilson, Address: Main Street.

and instructions. I am alluding only to the status of regimental veterinarian. The Colonel of the regiment was my boss. I could have told any higher-up veterinarian to go to hell, and the only recourse he would have had would have been to start. In other words, my each and every action was controlled, supervised, and induced by a layman, instead of by a professional man. I was instructed to turn over only hopeless and decrepit animals to the evacuation hospitals; in other words, to get rid of the "crips" when they could just as well have been shot.

No line officer tells a Doctor how to doctor, or a Dentist how to dent, but they certainly tell the Veterinarian how to vet. Perhaps we are to blame, for we do not pull together; practitioners belittle federal employes; federal employes work in communities where there are practitioners of high standing and never go near their offices. The same condition exists with state employes and practitioners. Why cannot we all get together, let each branch speak well of the other, and all be "brothers in dis great fraternal order—De Knights ob Veterinary Medicine."

When each member of a profession fully realizes the importance of the work which his fellow member may be doing, and all pull together, perhaps some satisfactory adjustments may be made. We must sell ourselves, and we must live in such manner professionally that we can look one another in the eye with a pure heart and clean conscience. Most of the adversities of the profession have been brought about by actions of its members. As an illustration, several years ago I asked another state veterinarian if he could not see his way clear to grant a deputyship to a young man whom I had known in the army, a boy of sterling qualities, keen, alert, and competent, bearing all the earmarks of the well-bred gentleman. The young man was struggling along doing his best to make a living, but was handicapped because all of his competitors were state deputies, while he was denied even the privilege of inspecting a dog for interstate shipment. The answer of the official was, "I have made all the appointments in that section which I deem wise, and I, furthermore, resent outside interference in the conduct of my official affairs." As the words were spoken he swelled up like a toad which had received an overdose of arsenic.

In this state, I have constantly pursued the attitude that any young man, graduated from a veterinary college, after having satisfactorily passed the examination to practice should, upon filing proper recommendations of a non-political nature, be granted a deputyship; notwithstanding that I often have been besieged with requests from older practitioners in adjacent

communities to "keep that fellow off the deputy list, then he will get discouraged and leave." I have never believed in being a party to kicking a man down. If he becomes so bad that he does not deserve recognition then he should be kicked out—not down. It is indeed a source of satisfaction for me to know that I have done all within my power to help lift up members of my profession, instead of kicking them when down.

In conclusion, strange as it may seem, it is not without a pang of regret that I look back over my past eleven years of official experience. I was happy amid the surroundings of a rural community—I knew nothing else; I had never experienced a taste of what some people might call high-living. I gave it up for what I thought was a change for the better—gave up a substantial business for a title. Now I am about to be shorn of the title and the business will have to be regained inch by inch, foot by foot, after I am on the other side of the meridian of life. I have no time to lose—I am like the prospector traveling toward the oasis before the sunset. I shall again attempt to pick up where I left off, starting in as I did twenty years ago to establish myself in practice. Twice I succeeded. The first interruption being the time I helped "to make the world safe for democracy." They say the third time charms—that remains to be seen. Nevertheless, I am going back to the land where I was born, and as I contemplate that glorious experience, under present conditions, which will probably continue thus, though to a lesser degree, for the next decade, the following lines run through my mind:

A City Man's Dream

Take me out of the city
With all its ghastly sham,
Back to the streets of a village
Where there is never a traffic jam.

And the old town well with its wood pump
Giving forth its heavenly brew,
While around its curb in a clump
Are the loafers who whittle and chew.

Free as the winds from a clovered dale
Of worries and cares of state
Where politicians glory to regale
In idiotic and senseless debate.

Back to the little town for me,
Away from the glitter and glare,
Where the chickens roost in the plum tree
And folks never know despair.

Wafted on the wings of the evening breeze
Scents from flower gardens on the lawn
Where Grandpa watches the bees,
Smoking and dreaming of days that are gone.

Never again the city with its misery, want and woe.
Let me live in a village where contentment rules supreme,
Basking in the moonlight, while cooling breezes blow
Carrying the song of the cricket to a sweet and peaceful dream.

LEAKAGE OF THE INGLUVIES IN A ROOSTER

When at a farm on a call, my client remarked that one of his roosters was leaking his wheat and that he would like me to look at it. Upon examination I found the patient in a deplorable condition. It was very much emaciated and the feathers were soiled and sure enough, there was a hole in his breast and the wheat ran out of it as fast as he ate it.

The site of the hole was cleaned up with an antiseptic solution, the edges of the opening in the ingluvies were slightly scarified and the opening was closed with cat gut applied in the form of a purse string suture. No attempt was made to close the opening in the external integument as it was badly torn by the rooster rubbing it on the ground.

After the operation, the patient was placed in a clean place and no after-treatment was advised.

A few weeks later when on a visit to the farm, I saw a fine looking rooster escorting a nice bunch of hens about the barn lot, and was told that it was my patient and I was glad to see that he had made a 100% recovery. My object in reporting this case is that it may be of benefit to some practitioner in a poultry section. I have frequently removed foreign bodies from the ingluvies, but this is the first case I have operated on where the organ was already open by some kind of traumatic injury.

Rembrandt Morgan.
Winfield, West Virginia.

Further Studies of the Lacto-vaccine in Mastitis*

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THE widespread incidence of mastitis infection in dairy herds presents a very important problem of treatment and in the maintenance of high quality of milk produced. The veterinarian is primarily interested in the treatment of such cases as arise in his practice, and these are usually only the active cases of mastitis. The nature of the infection is such that chronic forms are not readily recognized. In the course of these cases an active mastitis may flare up and the milk become abnormal in appearance with a decided abnormal flavor and odor. This abnormality may be present in one or more quarters of the udder of only one cow in a herd. If a careful physical examination is not made at the time of milking, the abnormality of the milk is not detected. When such milk is introduced into the total supply the quality is affected and the abnormal flavor and odor may be detected by the buyers of such milk. To insure a good product uniform in quality as far as the production is concerned, it is necessary for the management of a dairy plant to detect the cases of mastitis in their producing herds and properly advise concerning such cows.

The infected animals can be located in the various herds by the application of the several tests for mastitis. The producer immediately inquires concerning something which can be done or applied in an attempt to save some or all of such infected animals. One of the writers[1] has reported on a remedial substance. This paper deals with a further study of the application of that substance, a "lacto-vaccine," under average farm conditions.

*Journal Article No. 160 (n. s.) from the Michigan Agricultural Experiment Station.

Method

The preparation of a lacto-vaccine from infected milk and immediate use of such a vaccine on the dairy herd has been described in the previous paper. Infected animals were detected by application of bacteriological examination of the milk, and a physical examination of the milk and udder of each cow. The vaccine was freshly prepared each week by adding gentian violet to the aseptically collected infected milk at the rate of 0.1 cc of a 1% (1-100 aqueous dilution) of dye to 10 cc of the infected milk. This was allowed to stand 30 minutes with occasional shaking, and then used as the lacto-vaccine which was injected subcutaneously just posterior to the withers. Injections of vaccine and procedures for determining mastitis were applied at weekly intervals as recorded in the tables.

Experimental Results and Discussion

Two herds that were producing market milk and affected with mastitis were treated with the lacto-vaccine. The owner of these herds noticed that something was going through his herd rapidly; frequently causing production of abnormal milk by the various animals. The milk production of such animals was reduced immediately and, at the same time, an abnormal flavor and odor were imparted to the milk from the infected quarters. The active condition would then subside and not be noticed for some time. Such apparently normal, but actually abnormal secretions caused a reduction in quality of this producer's milk.

The presence of disease in the animals

TABLE 1

Results in Herd A include those cows added to the milking line from time to time and indicate two that were sold for slaughter. These two developed bad conditions in one quarter each, apparently due to staphylococci as secondary invaders. Vaccinated with gential violet lacto-vaccine.

Time of treatment	Amount of vaccine in cc.	Number milking animals in herd	Number of cows infected	Per cent of cows infected	Number of quarters infected	Percentage of quarters infected
Beginning	10	21	8	39	21	25
1st week	15	21	4	19.5	11	13
2nd week[2]	15	23	2	8.7	2	2.16
3rd week	15	23	3	13	3	3.26
4th week[3]	10	23	3	13	4	4.3
5th week[4]	12.5	34	4	11.7	4	2.9

[2]Two cows ended lactation period, one free from streptococci and the other positive in RR quarter.

[3]Beginning with this period, only infected animals and those that had been infected were vaccinated—the immunization of the non-infected animals is complete.

[4]Two cows developed bad conditions due to staphylococci and were sold for slaughter. Eleven cows were added to the milking line.

was detected by making bacteriological examinations of the milk and physical examination of the milk and udder. These methods were also used to follow the results of the vaccination.

Table 1 presents the results obtained in Herd A by the use of the lacto-vaccine. The non-infected animals were given three weekly injections to immunize them; the spread of mastitis in the herd was immediately halted, as is indicated in the table. Further injections were made on the infected animals, also upon such animals as were added to the milking line and found to be infected. This continual change in number of animals makes it difficult to tabulate the results. All such animals are included with notations as to the time when added and whether they were infected or not. The results in Table 1 indicate clearly that the spread of infection was halted, and a decrease in number of cows and quarters involved occurred. This decrease is more apparent if the percentage of animals infected at each weekly period is noted since changes in numbers are therein included. Table 2 presents the results obtained upon vaccination of the infected animals. The recovery of some of the infected animals is quite clearly indicated by these results.

Herd B is owned by the same producer but located several miles from Herd A. The mastitis prevalent here was also treated by the gentian violet lacto-vaccine. From a study of Table 3 it is seen that a decrease in the number of infected animals occurred.

Table 4 indicates more definitely the results in the infected animals by use of the lacto-vaccine. The first week a cow freshened and was found to be infected in all

TABLE 2

Results in Herd A include only those animals that were infected with streptococci and vaccinated with the gentian violet lacto-vaccine.

Time of treatment	Amount of vaccine in cc.	Number of cows infected	Per cent of cows infected	Number of quarters infected	Per cent of quarters infected
Beginning	10	8	100	21	65
1st week	15	4	50	11	34.3
2nd week[2]	15	2	25	2	6.25
3rd week	15	3	37	3	9
4th week	10	3	37	4	12.5
5th week	12.5	2	25	2	6.25
5th week[3]	12.5	4	50	4	12.5

[2]Two cows, one streptococcus free and other showing streptococci in RR went dry.

[3]Two new cows added to milking line both of which are infected in one quarter each. This line includes these two added cows whereas the first fifth week results do not count.

TABLE 3

Results on the whole herd (B) include those cows added, and freshened at various times which increased the number of animals in the herd. This herd was vaccinated with the gentian-violet lacto-vaccine.

Time of treatment	Amount of vaccine in cc.	Number milking animals in herd	Number of cows infected	Per cent of cows infected	Number of quarters infected	Per cent of quarters infected
Beginning	12.5	14	3	21.5	7	12.5
1st week[2]	12.5	13	3	23	10	19.5
2nd week[3]	12.5	15	2	13.5	5	8.3
3rd week	12.5	14	1	7	1	1.7
4th week	12.5			No samples this week		
5th week[4]	12.5	15	1	6.6	1	1.6

[2]One cow freshened and found to be eliminating streptococci in all four quarters; and two non-infected animals went dry.

[3]Three cows freshened; no sample from one cow this week.

[4]One cow freshened and added to milking line.

TABLE 4

Results in Herd B of infected (streptococcus) animals only and following them through the vaccination period. Vaccinated with gentian violet lacto-vaccine.

Time of treatment	Amount of vaccine in cc.	Number of cows infected	Per cent of cows infected	Number of quarters infected	Per cent of quarters infected
Beginning	12.5	3	100	7	55
1st week[2]	12.5	3	100	10	83
2nd week	12.5	2	66	5	62.5
3rd week	12.5	1	33	1	25
4th week	12.5		(No samples this week)		
5th week	12.5	1	33	1	25

[2]One cow freshened and showed streptococci in all four quarters.

four quarters. Simultaneously the disease in one cow which had been infected in one quarter cleared up; this keeps the number of cows constant but accounts for the increase in percentage and number of infected quarters the first week. The number of animals and quarters infected then decreased until finally one cow affected in one quarter remained.

It was thought that the results of this work would be a great benefit to dairymen who have infected herds and are interested in applying a curative agent. This work can be summed up under two points: (1) The spread of mastitis in the herd was halted by use of the vaccine and (2) nine of a total of eleven mastitis infected cows ceased eliminating streptococci or give any signs of infection.

[1]Bryan, C. S. Studies of Vaccines in Infectious Mastitis. J. A. V. M. A., Vol. 36, No. 3, September, 1933, p. 390-399.

TUBERCULOSIS IN ENGLAND AND WALES

The total number of cattle in England and Wales in 1929 was 5,957,594. According to Hunter, representing the Peoples League of Health of London, 39.5% of cattle slaughtered at abattoirs showed visible lesions of tuberculosis. About 0.2% of all cows have udder tuberculosis and may be eliminating living tubercle bacilli in their milk. An average of 6.7% of raw market milk contains living tubercle bacilli. It is estimated that 6% of all deaths in the human are caused by bovine tubercle bacilli, that is, approximately 2,000, mostly children, die annually from this cause in England and Wales. It is further estimated that at least 4,000 new cases of bovine infection develops each year.—*Exp. Sta. Rec.* 68.-3.

Pertaining to the Eradication of Bang's Disease

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IN TESTING cattle for the eradication of Bang's disease there are sometimes "breaks," reactors appearing in herds supposedly free from infection. In other herds new reactors continue to appear for long periods of time despite testing and the removal of such reactors. In both instances it is often impossible to trace the source of infection and many times there is an inclination to the belief that there are ways of spread of which we have not yet learned. Barnes[1] estimated that in the year preceding June, 1932, there were about 15 breaks in something over 500 reactor-free herds in Pennsylvania. In almost all of these the cause was known. In a few the source of infection was unknown. This seems to be quite the same experience that others have had except that some have not been so fortunate in tracing the cause. Non-reacting infected animals may play a part in breaks. Haring, Traum and Henry[2] reported three cows that shed *Br. abortus* in their milk yet one of the animals gave a negative agglutination test, another reacted 1:25 and the third 1:50. The effect such animals would have on a herd would depend on the length of time they eliminated the organism without reacting. The approximate maximum time a cow may carry infection without reacting is unknown. Buck and Creech[3] fed seven cows *Br. abortus* with two remaining negative for four months after exposure, the other five reacting earlier. Exposure through the conjunctiva resulted more quickly in positive tests.

WITH respect to tardy reactions in infected cows and the relationship of such cows to breaks the following is of interest: In one herd coming under our observation there was one cow that appeared to harbor infection for a long period of time, finally causing a break. In this herd consisting of 75 animals no reactor had been found for three and one-half years when the above mentioned cow (No. 18) reacted. She had been obtained in calf in May, 1931, from an infected herd (No. 2) but was herself a non-reactor. She remained so until February 14, 1933, when she reacted strongly, the first reactor, in herd No. 1, in over three years. Within four months three other animals reacted and two others became suspicious. Evidence that this cow was infected throughout her stay in the herd lies in the histories of the one into which she was introduced (No. 1) and of the one from which she came (No. 2). In herd No. 1 all other possible sources of infection were eliminated in so far as was humanly possible. The animals came in contact with no foreign animals and the men in charge were alert and reliable. She was the first to react. The herd from which she came was infected. Two other heifers purchased from this herd (No. 2) in May, 1932, were non-reactors and were kept in isolation. One reacted strongly six months and the other 13 months after purchase. The latter first showed a suspicious reaction at 12 months. This indicates that the first cow (No. 18) from this herd might also have been infected and for even a longer time, without reacting. Again, the herd from which these animals originated (No. 2) has a peculiar history in that it was free from reactors at one time for a period of two years, following which nearly the entire herd reacted without evident outside source of infection. From a study of the entire situation we believe that the three animals from herd No. 2 did not infect each other, that there was no outside

TABLE I
Fatal Cases of Experimental Swine Erysipelas

Pig No.	*Months of Age*	*Dates of Exposure*	*Method of Exposure*	*Material*	*Results*	*Bacteriological Findings*
4198	4½	3-18-32 to 4-3-32	Fed	50 c.c. of broth culture of E. rhusiopathiae daily	Dead 4-8-32	E. rhusiopathiae recovered from spleen, kidney and lymph glands
4150	4	4-12-32	Inoculated intravenously	20 c.c. of broth culture of E. rhusiopathiae	Dead 4-15-32	E. rhusiopathiae recovered from blood, lung, spleen, kidney, liver and lymph glands
4250	3	4-19-32	Inoculated subcutaneously and intraperitoneally	20 c.c. of broth culture of E. rhusiopathiae	Dead 4-24-32	E. rhusiopathiae recovered from blood, lung, spleen, kidney, liver, lymph glands and urinary bladder
4251	3½	5-5-32	Inoculated intravenously	10 c.c. of splenic emulsion from field case of swine erysipelas	Dead 5-14-32	E. rhusiopathiae recovered from blood, lung, liver, spleen, kidney, lymph glands and urinary bladder
4226	3½	5-13-32	Inoculated intravenously	4 c.c. blood serum from field case of swine erysipelas	Dead 5-18-32	E. rhusiopathiae recovered from the blood, spleen, kidney, liver and urinary bladder

Remarks—Pig No. 4198 had been inoculated with erysipelas culture prior to feeding but failed to show evidence of infection. Erysipelas culture used for inoculation of pig No. 4150 was recovered from experiment pig 4198. Erysipelas organism was recovered from the blood of pig No. 4250 on the 2nd and 4th days and from the urine on the 4th day after inoculation. The erysipelas organism was recovered from the blood of pig No. 4251 on the 7th and 8th days after inoculation. The erysipelas organism had been recovered in cultures from the blood serum sample used for inoculation of pig 4226.

Symptoms—Experimental pigs 4198 and 4150 died rather suddenly after showing first symptoms of the disease. The other three pigs, 4250, 4251 and 4226, showed symptoms typical of acute swine erysipelas.

Autopsy Findings—All of the pigs, excepting 4198, showed well-defined, dark red or purplish areas on the skin. Pig 4150 exhibited the typical diamond-shaped areas on the skin of the abdominal region (Fig. 1). The lesion in the various organs and tissues of the five pigs were typical of acute swine erysipelas, consisting of enlarged, soft spleen; congestion of lungs, liver and kidneys, with occasional hemorrhages in these organs; lymph glands congested, hemorrhagic and edematous; hemorrhage of the mucosa of stomach and intestines; occasional small hemorrhages of the urinary bladder.

sipelas. Typical acute experimental cases of swine erysipelas were produced in pigs 4150, 4198 and 4250 (Table I) with strain R-8, while failure was experienced in producing a single fatal case of the disease with strain R-7.

It was found possible to infect only one pig out of four by feeding cultures of the erysipelas organ over a period of time. This can not be readily explained in view of the generally accepted belief that infection most frequently takes place through the intestinal tract.

The demonstration of the erysipelas organism in large numbers, in the urine of three of the fatal experimental cases, would indicate that the urinary tract is probably one of the principal avenues by which the organisms are widely disseminated, particularly in the later stages of the disease.

Summary

A COMPARISON of experimental results with the virulent character of swine erysipelas as it occurs under herd conditions shows by the marked contrast that there must be certain factors which influence the virulence of the organism in its natural environment which are now little understood.

While field cases of acute swine erysipelas in pigs a few weeks of age are not uncom-

TABLE II
Non-Fatal Cases of Experimental Swine Erysipelas

Pig No.	*Months of Age*	*Dates of Exposure*	*Method of Exposure*	*Material*	*Results*	*Bacteriological Findings*
4253	3½	2-25-33	Inoculated intravenously subcutaneously intraperitoneally	20cc of broth culture of E. rhusiopathiae	Symptoms of S. E. survived	Blood cultured on the 4, 5, 6, 9, and 12 days after inoculation. Cultural results negative.
4254	3½	2-25-33	Inoculated intravenously	20cc of broth culture of E. rhusiopathiae	Symptoms of S. E. survived	Blood cultured on the 4th day yielded the erysipelas organism. Cultures made on 5, 6, 9 and 12 days gave negative results.
4255	3	3-31-33	Inoculated intravenously intraperitoneally	20cc of broth culture of E. rhusiopathiae	Symptoms of S. E. survived	Blood cultured daily from 3rd to 8th day after inoculation. Cultural results negative.
4256	4	3-31-33	Inoculated intravenously intraperitoneally	20cc of broth culture of E. rhusiopathiae	Symptoms of S. E. survived	Blood cultured daily from 3rd to 8th day after inoculation. Cutural results negative.
4257	4	4-27-33	Inoculated intravenously	20cc of broth culture of E. rhusiopathiae	Symptoms of S. E. survived	Blood cultured daily from 4th to 8th day after inoculation. Cultures on 4th day yielded erysip. organism. All others were negative.
4258	4	4-27-33	Inoculated intravenously	20cc of broth culture of E. rhusiopathiae	Symptoms of S. E. survived	Blood cultured daily from the 4th to 8th day after inoculation. Cultural results negative.

Remarks—Only mild symptoms were noted in pig No. 4253. Pig No. 4254 developed acute arthritis. Symptoms observed in pig No. 4255 were brief and also rather mild. Pig No. 4256 developed acute arthritis. Pig No. 4257 developed acute arthritis. Pig No. 4258 developed acute arthritis.

Symptoms—The symptoms were somewhat less marked in 4253 and 4255 than in the other four pigs which developed arthritis. In pig 4257 the joints of all four legs, including the feet, were very much swollen, hot and painful, resulting in extreme lameness, the animal refusing to bear weight on the front feet (Fig. 2).

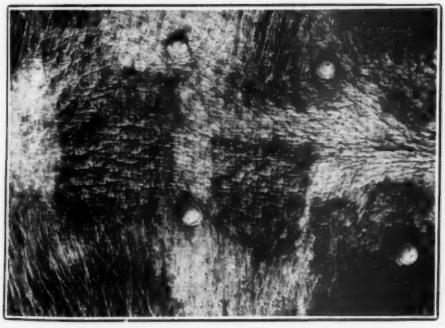


Fig. 1—Photograph showing diamond-shaped, hemorrhagic areas of the skin of the abdominal region of experimental pig 4150, which died of acute swine erysipelas on the third day after inoculation with culture of E. rhusiopathiae. Natural size.

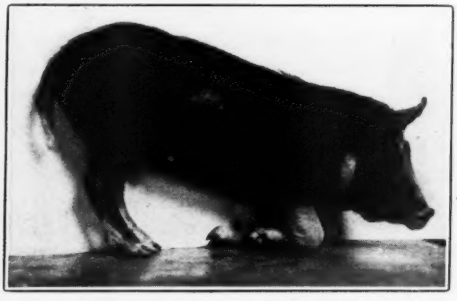


Fig. 2—Photograph of experimental pig 4257, showing lesions of acute arthritis. Note the extreme swollen condition of the various joints, including the feet. The swelling and soreness were more pronounced in the front feet, on which, as evidenced by the picture, the animal refused to bear weight.

TABLE III
Negative Experimental Cases

Pig No.	*Months of Age*	*Dates of Exposure*	*Method of Exposure*	*Material*	*Results*
4147	4	4-19-32 to 5-4-32	Fed	25cc of broth culture of E. rhusiopathiae daily	No symptoms. Results negative.
4149	4	4-19-32 to 5-4-32	Fed	25cc of broth culture of E. rhusiopathiae daily	No symptoms. Results negative.
4195	7	5-20-32	Inoculated intravenously	5cc of blood from Exp. pig 4226	No symptoms. Results negative.
4196	4½	3-18-32 to 4-3-32	Fed	50cc of broth culture of E. rhusiopathiae daily	No symptoms. Results negative.
4199	4½	2-24-32	Inoculated intravenously intraperitoneally	20cc of broth culture of E. rhusio-	No symptoms. Results negative.
4228	3½	5-20-32	Fed	50cc of urine from Exp. pig 4226	No symptoms. Results negative.
4229	3½	5-20-32	Inoculated intravenously	5cc of blood from Exp. pig 4226	No symptoms. Results negative.
4230	3½	5-20-32	Inoculated intravenously	5cc of urine from Exp. pig 4226	No symptoms. Results negative.
4249	8	4-19-32	Inoculated intravenously	20cc of broth culture of E. rhusio.	No symptoms. Results negative.
4259	3 weeks	4-27-33	Inoculated intraperitoneally	20cc of broth culture of E. rhusio.	No symptoms. Results negative.
4260	3 weeks	4-27-33	Inoculated intraperitoneally	20cc of broth culture of E. rhusio.	No symptoms. Results negative.

Remarks—Pig No. 4196 was also exposed by contact with pig 4198 for one week prior to the death of the latter. Pig No. 4228 was also exposed by contact with pig 4226 two days prior to death of the latter.

mon, it is apparently difficult to infect pigs of this age experimentally.

Out of a total of 22 pigs used in these experiments, definite symptoms of swine erysipelas were observed in 11 cases, or 50% of the animals subjected to the different methods of exposure.

Of the 11 animals showing evidence of infection, five resulted fatally and two showed only slight symptoms of the disease.

One of the five fatal cases was produced by feeding, two by culture inoculations, one by inoculation with splenic material from a field case of acute swine erysipelas and one by inoculation with blood serum from a known natural case of the disease.

COURT DECISIONS ON MILK

In a New Jersey case[1] a man who became ill after consuming milk was awarded $2,500 damages, and his wife who tasted the milk to ascertain what was wrong with it and also became sick, got $500. The court held that there was no contributory negligence in her action. In Illinois a section of a "filled milk law" was pronounced unconstitutional because it prohibited the sale of a nut oil and evaporated skim milk product which the court considered to be wholesome and, in its own words, "Not poisonous or explosive."[2]

MUST CONTROL LIVESTOCK DISEASES AT ALL TIMES

No matter what the relation between supply and demand may be, our policy as to livestock diseases must be one of prevention, eradication and control. While production is controlled by restricted breeding and other means, diseases must be fought or they will get beyond control and ruin producers. Examples of prevention, eradication and control in handling live stock diseases are seen in the methods used in combatting foreign plagues, tuberculosis and hog cholera.

Bovine tuberculosis has now been practically eradicated from 53% of all the counties in the United States, including 11 entire states. Anti-hog cholera serum is effective insurance against the disease that at one time demoralized the swine industry. International quarantine regulations have given this country protection against livestock plagues that are prevalent in foreign countries.—*J. R. Mohler.*

DROUGHT-INJURED SUDAN GRASS AND SORGHUM DANGEROUS FEED

Sudan grass and sorghum that have been injured by drought are extremely dangerous as a pasture or green feed for livestock. These cultivated grasses are more resistant to drought than most forage crops, but their prussic acid content is greatly increased by drought injury.

In the Great Plains area, where the recent severe drought has ruined many ranges and pastures, great care should be used in pasturing livestock on sudan grass or sorghum or in utilizing these crops as green feed. The safe way to utilize drought-injured sudan grass, sorghum or Johnson grass is to put it in a silo, taking care to add enough water to insure fermentation, or to cure it thoroughly before feeding.

Investigations show that sorghum injured by drought may contain more than 2½ times as much prussic acid as uninjured plants.

NEW VETERINARY POLICE MEASURES IN ILLINOIS

The recent session of the Legislature in Illinois enacted two measures of interest to veterinarians. One authorizes the Department of Agriculture to require the vaccination of dogs or other animals against rabies in addition to the authority it already possessed to quarantine dogs and other animals as a control measure against rabies.

The other new law requires the Department of Agriculture to brand with the letter T all cattle that give a positive reaction to the tuberculin test.

A farmer had four horses stricken with a disease which the local veterinarian diagnosed as botulism. Three of the animals died. The description of the symptoms indicated some kind of poisoning. An examination of the feed and water failed to reveal any indication of disease organisms. The water supply was used only for the horses. The source of water was a shallow dug well walled with a poured concrete cistern approximately six feet square and 10 feet deep. The cistern was covered with loose planks.

An examination of the walls of the cistern revealed near the surface of the water clusters of mushrooms. Some of the clusters were submerged beneath the surface of the water, while others had broken loose and had fallen into the water. Poisoning due to these mushrooms was suspected. The mushroom was identified as a species of Volvaria, which has been reported to be poisonous. A fairly well preserved stalk was ground in a sterile mortar with sterile saline and sand. The finely ground pulp was fed to two guinea pigs. One pig died in 24 hours and the second in 48 hours. It is entirely conceivable that the horses in drinking large volumes of the water would obtain sufficient amounts of the mushroom to cause poisoning. As far as the writer is aware this is the first report of this type of poisoning apparently caused by drinking water.—Rept. Div. of Vet. Science, Mich. State Col.

Sheep Troubles

E. T. BAKER.
Moscow, Idaho

WITH the advent of better prices for wool and mutton, more interest in sheep husbandry and diseases will be taken by the owners, and it will pay the average practitioner to brush up a little in this branch of our science.

Thousands of small farm flocks are scattered throughout nearly every section of our country, and, while no veterinarian will ever become rich from sheep practice alone, he will be able to pick up a good many additional dollars each year. Not only that, but it brings more clients, even if the immediate returns are not great. While J. P. Morgan and the writer are in the same class—neither one of us paying an income tax last year—J. P. managed to keep the wolf from the door by little investments here and there, and we were able to do the same by occasional sheep calls, which were usually cash.

Building a Sheep Practice

THE practitioner will find that he can build up his sheep work gradually. For example, your client, John Smith, with a flock of 30 grade Shropshire ewes, loses some of them in the winter from the lack of proper feed, care and exercise. He is a tenderfoot at the game, and knows less about the subject than the writer knows of the tariff. You are called out to the Smith place one nice, blustery morning in January or February, and find the following condition: Four ewes are dead; three helpless on their sides; half a dozen wabbling around as though dizzy, and the remainder look apparently normal.

Before we realized the value of calcium gluconate and parathyroid therapy, our loss in such cases averaged 100%. Outside of this, the mortality was small. It was cases like this that gave "sheep doctoring" a hard name. Suppose you were called to see a dozen cows down with the milk fever, and told each owner you were sorry, but you could do nothing for him. In other words, much bovine work is in the same condition, milk-fever treatment was before the air treatment or calcium therapy was discovered, or human medical practice before diphtheria antitoxin was perfected!

Care of Pregnant Ewes

WHILE sheep are delicate, and will succumb to some apparently trivial ailment without any valid excuse, yet many can be saved in the same fashion as milk fever is handled today. Here is where the practitioner can do some missionary work for the future. After examining the sick ewes, he can say to the discouraged owner:

"Well, John, I'm afrain I can't do much for the ewes that are totally paralyzed, but we'll see what we can do for the others. Next year, if you want to avoid a lot of grief like this, fix up a little shed of their own, where the sheep can run into when it rains, or away from the flies in summer. Don't let horses, cows or dogs chase pregnant ewes. This coming fall remind me to make up a good tonic powder to give your ewes next winter in their feed or salt. Feed whole oats and some coarse bran towards the end of pregnancy, and supply water with the chill taken off. Real, cold water seems to give a ewe lamb colic, and she will drink very little, just at a time when she needs plenty to flush the poisons out of her system. See that they get a couple of miles' exercise every day, with clean hay, free from mold, and don't feed clover hay, unless absolutely necessary. Don't breed too early, for lambs born in our northern climate around April or May will do just as well and weigh as much in July or August as little, shivery fellows coming in a February or March blizzard."

YOU go to work and give the wabbly ones from 50 to 100 cc calcium gluconate in the axillary space, using a 20 or 30 cc syringe. You can use a little equal parts tincture of iodine and sulphuric ether to paint over the point of injection if you care to be very aseptic. A short, thin needle should be used. We have often wondered, in our rustic simplicity, why manufacturers continue to turn out needles about four to six times too long. Why not make them short, sturdy, sharp-pointed and of rustless steel?

In a few hours nearly all the sick ones not totally paralyzed look like a new deal, and begin eating. The ones down on their sides usually pass into sheep heaven, although some in the first stages may recover. According to reports, a few practitioners are so skilful in giving calcium chloride intraveneously that they have saved the dying. In these cases, the needle should be fastened to the syringe, for the almost moribund ewe gets up so rapidly and runs away so swiftly the operator does not have time to take the instrument out of the vein. Great care should be taken by the operator in these cases for the patient may become unruly and butt him between the naval base and the cowshed.

A Good Tonic Powder

NEXT fall about Thanksgiving John comes in "fer that there sheep powder," and you can supply him with something like the following:

Steamed bone meal	10 lbs.
Sifted slaked lime	5 lbs.
Salt	5 lbs.
Sugar	5 lbs.
Epsom salts	2 lbs.
Powdered licorice	1 lb.
Charcoal	1 lb.
Powdered potassium iodide	2 oz.
Saccharin	1 oz.

As sheep are very "finicky eaters," like dairy cows, we try to make the mixture as palatable as possible. Ewes like sweet powders, and as saccharin is 500 times as sweet as sugar, this helps to disguise the taste of bone meal, lime and potassium iodide. Figuring a level teaspoonful per ewe about three times a week we find that it will take about ten pounds of this powder to feed 30 ewes three months. As there are about eight level teaspoonfuls to the ounce, a four-ounce container will be just enough for one feeding, and we supply a pasteboard carton for a measure.

We also suggest feeding a half-pound of

Calcium gluconate is the New Deal for paralyzed ewes.

whole oats and a sixth of a pound of coarse bran daily, with plenty good, clean hay, preferably alfalfa. If the owner wants the ewes to have plenty of milk for their young, he can take an old sprinkling can, fill it half full hot water and then add some molasses and sprinkle this over the hay three or four times a week. Pea straw, clover hay and any moldy forage and pregnant ewes cause nothing but grief to all concerned. Due to a lack of proper minerals, ewes will often eat any sort of sour or moldy straw toward the end of pregnancy, with fatal results.

The next spring John meets you in town with a smile and says: "Say, Doc, you oughta see them ewes and lambs! Got 40 from 32 ewes, with lots of milk and no downers like last year. That powder sure did the work!"

YOU then suggest he dock all the lambs and castrate the males before they get more than ten days or two weeks of age. If he is inexperienced, you can tell him how to do the work. You can even lend him a

small emasculator and a bottle of antiseptic. You tell him to cut the lower third of the scrotum off with a not too sharp knife or pair of scissors. With clean fingers, pull out the testicle and snip it off, or, in very young animals, pull out cord and all. A little antiseptic is then thrown into the wound. We have used the following for years:

Pyoktanin blue .....xx gr.
Lysol .....ii oz.
Kerosene q. s. ad.....xvi oz.

This prevents infection and swelling, and is far different from the usual tar solutions and the client thinks it "great stuff."

TO dock the tail, the skin may be pulled towards the body, the amputation made

Don't let horses, cows or dogs chase pregnant ewes.

at the second joint, and a little dusting powder applied. We like an old equine emasculatory or bone cutters, and the above mentioned antiseptic may be used the next day if the flies are bad. We like to perform these operations in the morning in a clean pasture so the lambs will exercise during the day and get good drainage. If the work is done during the late afternoon in a dirty barnyard, the lambs lie down in the filth, and the clotted blood makes a fine culture media for all the different little germs in the neighborhood. The animals swell up like a case of misplaced mumps, and lose nearly a week's growth in the mix-up.

Difficult Lambing

SUPPOSE you are called to a case of ovine dystocia, for we must be scientific

When trouble occurs it is on a large scale.

once in a while or else we might lose our diploma.

The first thing to do is to get your instruments, such as obstetrical chains and wire stretchers out for action. Have a pail of warm water with a good antiseptic, such as used for bovine retained placenta work, and lubricate your right arm well.

Now, head the ewe into a corner, with a strongbacked weak-minded tiller of the soil on each side; yourself making the third of the trio, for we will not count in the ewe. Your assistants now hold a board or a small box under Mrs. Ewe's belly to elevate her hindquarters. You cone your fingers and work your hand in gradually, finally coming to a mess of feet or even the head. If only feet are present, don't get in a hurry and begin pulling, for not all the feet may belong to the same lamb.

We like to push back the fetus and get an entirely new start, and with the hips of the ewe elevated, about half our work is solved right then and there. When we get the fetus started correctly, or think we have, we pull one foot at a time, thus slipping one shoulder or one hip past the pelvic outlet ahead of the other. We usually attach the 30-inch obstetrical chains, for if anyone thinks they can get a big lamb out of a young ewe by "gentle traction," they have another guess coming.

We seldom remove the afterbirth, but insert one or two No. 11 capsules filled with

equal parts iodized charcoal and boric acid. Unless the lamb is dead, we never irrigate the uterus.

Orphaned Lambs

WHEN bottle feeding must be resorted to, suggest adding a few drops lime water and corn sirup to the milk. More lambs are killed by too much feeding, as we all know, than by too little. An experienced sheep herder will raise a whole corral full of "bum lambs" on nothing but diluted condensed milk and profanity and never lose one. He keeps them so hungry they nearly mob him when he comes near.

WHEN one of these kindhearted farmer pests over-feeds the animal and gets a nice case of diarrhea started, we like milk of magnesia, castor oil and the white of egg, with plenty of warm water and no milk for several feedings. Carron oil is also good and inexpensive. Usually the medicine is about equally divided between the patient and the owner's clothes, but why should that worry us? It does not.

Bloat

IN treating digestive troubles in sheep, one can use practically the same line of medication used for the same condition in cattle; giving one-eighth the cattle dosage.

We have found barium chloride and strychnine should be used very sparingly, but tartar emetic and cascara are useful drugs. Sodium hyposulphite is one of our sheet anchors, for it prevents fermentation, is a laxative and a mammary stimulant in nursing ewes. We like the following mixture as well as any we have ever tried:

Aromatic spirits ammonia.....iv dra.
Turpentine .....i oz.
Antiseptine ....i dra.
Bovine laxative—q. s. ad.....viii oz.

Backing Mary Ann Ewe into a corner, with her head up hill, we carefully introduce our two-ounce dose syringe in the side of the mouth, over the tongue, and inject the contents slowly. She will do everything but swallow, but be patient. Tickle the roof of her mouth or crack a joke. If she becomes too weak to stand up and her lower jaw "flops down," stick a trocar into her left side immediately, if not sooner. We use the ordinary pencil type of equine trocar for this purpose.

THE bovine laxative is made as follows: In a ten-quart granite bucket, half full of hot water, add five pounds sodium thiosulphate (or common hypo) and two pounds salt. Stir well until dissolved. Add eight ounces flext. aromatic cascara, one ounce saccharin and a five-pound can dark corn sirup. Mix well, and fill bucket up with hot water. This is our main "vehicle" and can be used for anything except a busted banker or a county agent—add croton oil for them. Fifteen to thirty grains tartar emetic can be added for an ordinary sized ewe, or five grains for a lamb.

For mastitis, we use the bovine laxative in four ounce doses twice daily, applying white liniment, belladonna or phytolacca ointment to the udder. In gangrenous cases, commonly called "blue bag," slash the udder from one end to another. This sounds cruel, but is the most humane treatment in the end. Give aspirin or chloral to relieve the pain.

Parasites

IN MANY sections, parasites, particularly stomach worms, are the bane of the sheep industry, and the practitioner should make a study of local conditions. What will succeed in one locality may utterly fail in another. Keep in mind, when using vermi-

Sheep turned onto wheat stubble are prone to founder.

fuges that nourishing food, minerals and a contented frame of mind are essential. We do not know how much of a "mind" a sheep possesses, but we do know a worried animal will not thrive.

IF THE veterinarian can work up a good business administering worm capsules, so much the better. Other owners demand powders to mix in the feed. Some will administer liquids. The main idea is to study your needs and then meet them the best you can, with the cooperation of the clients.

Founder

LAMINITIS or founder is more common than many think. Most cases of acute indigestion brought on by too much grain, cold water or retained placenta, are accompanied by more of less founder.

Usually, we use the bloat treatment orally, and in addition, paint the feet with "red oil." Ten grains of aspirin daily, and one-fourth an equine laminitis tablet may also be given. We have never used the normal horse serum or the bovine serum, but expect to this year. In bad cases, the medicine may be pumped directly into the rumen, which will be found impacted, and a pint or more of mineral oil is good to loosen up this mass.

Footrot

WE HAVE two types of this disease in sheep. The first is much like thrush in the horse, while the second is caused by the necrophorus bacillus, and is very contagious. It may also affect the lips and the genitals, and is then known as "lip-and-leg ulceration." When the latter type appears, it should be reported to state or Federal live stock officials at once.

FOR ordinary footrot of the thrush type, we may use the following treatment: First, run the affected sheep through a warm antiseptic and deodorizing solution, such as potassium permanganate and sodium chloride. Allow to stand for a half hour to drain, and then, with a good pair of rubber gloves and sharp hoof knife, trim the gangrenous tissue away. Don't forget the rubber gloves or your finger nails will have a faraway odor for several days. The perfume is a cross between a decayed molar and a deceased skunk. We usually wear old overshoes and overalls, and after working on a large band of sheep, carefully bury them out on the lone prairie.

In small outbreaks, after being trimmed as thoroughly as a sucker in the stock market, the feet can be soaked in about three

In June sheep are trailed to the Forest Preserves.

inches of "red oil," such as suggested for founder.

Red Oil

THIS valuable oil is made as follows: In a full-grown mortar, slice two

Soaking foot rot in "red oil."

ounces gum camphor; pour one ounce sulphuric acid over the camphor and stir with a glass rod. Introduce gradually one quart turpentine, stirring all the time. The mixture will smoke like a co-ed far from mother's care, but keep on stirring. After its fever has subsided, add an ounce of oil of eucalyptus and some red oil color. Let stand over night and siphon off the next morning, using the sediment to paint on sore hoofs or dehorned stumps. This red oil can be used full strength, or it can be diluted to suit the requirements for sore teats, wire cuts, abscesses and the like. Last winter, we accidentally let the back door of our Buick fall on our bowling thumb nail. We soaked the damaged digit in this mixture and were surprised how healing and soothing it proved to be.

IN SOME cases, the lanolin and tartar emetic ointment, as suggested by Dr. Howarth, of the earthquake state, will be found extremely efficacious. We have also used copper sulphate, lysol, creolin, arsenic, and potassium permanganate solutions. In one small stubborn outbreak we tried the pyoktanin blue solution, as mentioned above,

In July or August wether lambs are cut out and trailed to the nearest railroad station. This band contained 2200 such lambs.

with good success. Where lip-and-leg lesions are present acetic acid or vinegar solutions, or potassium permanganate and powdered alum solutions may be used. Good nourishing feed with plenty of calcium should be supplied.

Infectious Diseases

HEMORRHAGIC septicemia in its various forms is the most prevalent infection among sheep in our experience. It assumes many guises, such as pulmonary, intestinal, cutaneous and nervous types. Serum and bacterins may be used in infected flocks, with a change of quarters, and a little blue vitriol in the drinking water. Ag-

We vaccinated over 5,500 in three days for prevention of hemorrhagic septicemia.

gressins may be used in exposed animals. Don't be afraid to use generous dosage.

In the spring, tetanus sometimes pops up after docking or castrating in an infected area. Immediate removal to other quarters is about all that can be done. We have never tried tetanus antitoxin in sheep.

Blackleg may appear in lambs six months of age or younger, and the vaccine, bacterin or aggressin will protect the exposed.

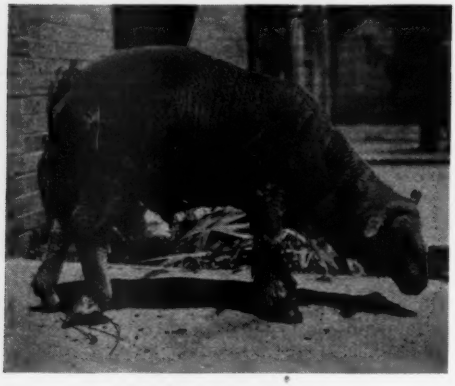
Rabies, malignant edema and other rare

Chronic hemorrhagic septicemia induces a contemplative attitude in sheep.

maladies may appear now and then, but are seldom met with in practice. Whenever possible, send some affected tissues or blood into the nearest bacteriological laboratory, and suggest a change of quarters. Always do something to earn your fee, and it is surprising what a good partner old Mother Nature will prove.

Range Diseases

A WESTERN band of sheep usually consists of around several thousand head, and one outfit may run from ten to fifteen thousand animals.



Blackleg may appear.

The sheep spend the winter, from October to June, at the home ranch, which is usually situated in some protected river valley or canyon. Lambing may begin in February and run to May, depending on the location. Then comes shearing, and getting the animals ready for trailing or shipping to the summer range, in some national forest.

In July or August, the wether lambs are cut out of the bands and trailed to the nearest railroad shipping station, and sent to some packing center.

Large amounts of money are either made or lost in the sheep business of the west. When prices are good, profits are fabulous; when they go down, suddenly, the bubble bursts. Therefore, to stay in business for a series of good and bad years, the sheep man must have two things: Sufficient winter and summer range and good financial backing.

Many herders are college students earning a little money during vacation, and later go into the business for themselves. Other herders have taken advanced degrees in keeping down the surplus supply of moonshine or other chemical escharotics.

PLANT poisonings, predatory animals, parasites, and infectious diseases, such as hemorrhagic septicemia or footrot, cause the greatest amount of trouble. Sudden blizzards in the spring after shearing; hard winters; forest fires in summer; and low prices are the other main hazards.

When trouble does break out in a sheep outfit in the west, it is on a large scale. We have vaccinated over 5,500 ewes, lambs and bucks in three days for hemorrhagic septicemia, and treated some 6,000 cases of footrot for one outfit. 300 to 500 cases of founder, and over 2,000 head poisoned by death camas are other cases. One firm had 600 ewes die from pregnancy disease in a single week. Others have several hundred lambs die from navel infection or more plainly speaking, from filth. Our first case among sheep, over twenty years ago, was among nearly a thousand lambs dying from what we diagnosed as blackleg, and as the vaccine stopped the trouble, the diagnosis must have been correct.

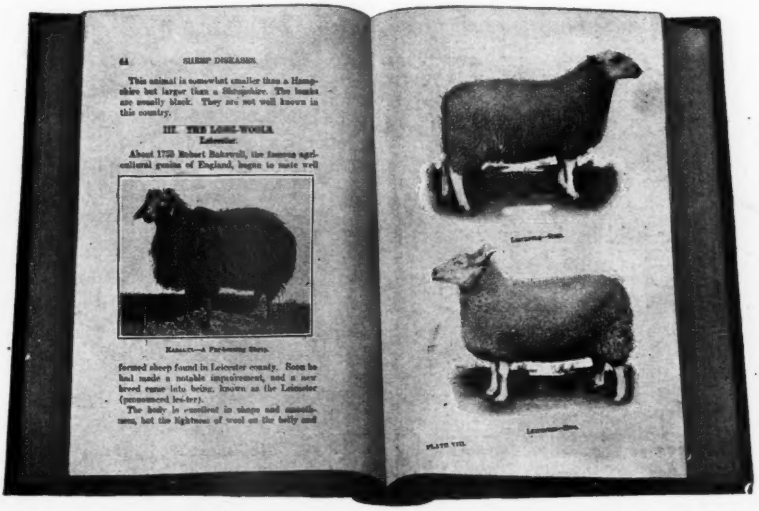
Coccidiosis in feeder lambs. Most of the troubles of feeder lambs, even this one, are basically dietary.

Conclusion

FIRST of all, become familiar with the various breeds kept in your territory. Learn something about their history, handling, care and general hygiene. A little reading up on wool and textiles will not hurt you a bit.

LEARN how to hold a sheep for an examination, and how to give medicine with dexterity and skill. Practice a little on ascertaining the age by the teeth. Polish up your knowledge of ovine anatomy and physiology.

SHEEP practice, like any other branch of our profession, if given some study, will be found interesting and moderately profitable. It is not at all difficult, and becomes less puzzling with experience. Keep in mind the time of year; the age, sex and breed, together with the prevalent diseases and parasites in your locality. Then, after forty or fifty years of practice and a little intensive study, sheep problems will become almost as easy as "spotting" a milk fever or an azoturia case.


64 SHEEP DISEASES.

This animal is somewhat smaller than a Hampshire but larger than a Shropshire. The heads are usually black. They are not well known in this country.

III. THE LONG-WOOLS.
Leicester.

About 1750 Robert Bakewell, the famous agricultural genius of England, began to mate well

formed sheep found in Leicester county. Soon he had made a notable improvement, and a new breed came into being, known as the Leicester (pronounced les-ter).

The body is excellent in shape and smoothness, but the lightness of wool on the belly and

PLATE VIII.

Become familiar with the breeds in your locality.

Chloroform Anesthesia in the Cat . . .

IT IS generally considered, not only by veterinary surgeons, but also by physiologists, that chloroform as an anesthetic for the cat is dangerous. This is true unless it is used with great care and patience, and not in too great a concentration. Not all cats are alike in susceptibility, and in consequence much circumspection is required. It is much easier to get nervous animals under the influence of the anesthetic than quiet animals, which, under normal conditions, hold their breath longer and are therefore longer in becoming unconscious. Young animals go under more quickly than do older ones, but even then there are many exceptions to the rule.

THE simpler the method used in the administration of chloroform, the safer it would seem to be. Some advise a mixture of chloroform and alcohol, others one of alcohol, chloroform and ether. These, however, merely dilute the chloroform and therefore have little or no anesthetizing power. I am satisfied with a small quantity of pure chloroform given from a jam jar, Cerebos salt canister or a round-rimmed aluminum canister, of 2-lb. or quart capacity, having at the bottom a thin layer of cotton-wool on which is sprinkled a dram of the drug for kittens and one and one-half drams for adults. The animal's head is placed or held in the apparatus, and when the subject begins to breathe regularly and more deeply the canister is drawn back so that the muzzle just rests in the opening.

The animal may be held by the scruff of the neck when it is standing on its four limbs, and when it offers resistance (as it will do) the apparatus is withdrawn for a second or two and then reapplied from time to time until the subject begins to lose consciousness. At that stage it can be placed on its left side and released to inhale the anesthetic with the muzzle resting just at the entrance of the canister or jar. I do not consider the animal to be anesthetised sufficiently to undergo the operation until all movement of the limbs has ceased and there is no longer any response to the pedal reflex. This cessation, or rather deprivation, of the pedal reflex is ascertained by seizing the hind foot between thumb and fore-finger and drawing the limb from the body and compressing the pad. If there is no retraction or attempt on the part of the animal to withdraw the limb during the compression and the limb rests passively when it is released, then it is time to commence the operation. Although I have on many occasions drawn attention to this reflex, no reference is made to it in our text-books, nor would it appear to be taught in the colleges: at all events, I have gathered, for several years, from many students and assistants I have met, that they were not taught it. There are other reflexes such as the ciliary, palpebral, mental (chin) and aural, but they are not of much practical importance to the practitioner. The reflex to which great attention is usually paid is the corneal, but it is not reliable, for, in the dog at least, it may have disappeared long before struggling or screaming has been overcome or the breathing has become regular and quiet.

If the operation is of long duration, half-a-dram or a dram of chloroform should be added as soon as the first dose has become exhausted. By this method I have kept cats four or five hours in a state of anesthesia without touching them beyond when applying a fresh supply of chloroform.

THE *second* method, and the one I generally adopt, is for an assistant to hold the fore-limbs of the cat with the right hand and the hind legs with the left—the animal lying on its left side—while the administrator of the chloroform holds the

scruff of the neck with the left hand and the canister in the right.

THE *third* method is that of forcibly holding the body of the cat to one's side while the scruff of the neck is grasped by the left hand and the canister by the right hand of the one holding the cat. The animal struggles, but soon becomes exhausted and does not offer any resistance when it is let go, and commences to inhale the chloroform, with the muzzle resting just inside the canister or jar.

I do not now make use of the lethal chamber or a box to administer chloroform, as it takes too much chloroform and too long to get the animal under its influence.

With a metal, glass or earthenware apparatus one can sterilize it every time it is used on a fresh cat and thus prevent transmission of distemper or infectious enteritis should the apparatus have been used, unknowingly, on an animal suffering from the initial or recovering stage of either infection.

Some cats with regular breathing suddenly cease to breathe when anesthetized in this manner. As a rule, in such cases, if the chloroform is taken away for a minute the breathing commences again and the inhalation may then be allowed to proceed, when there is usually no further trouble. If the respiratory effort does not reappear after two or three minutes Laborde's method—traction and relaxation of the tongue for a few times—may be adopted. If this has not the desired effect, recourse may then be had to artificial respiration, which I find is rarely required.

The mere arrest of respiration is not in itself dangerous, especially if the tongue or lips quiver or are pink, plump and glistening and the pupils contract and dilate. In such cases early stimulation or over stimulation may do more harm than good. It is a good practice not to lift or upset an animal too soon after the removal of the anesthetic, but let it remain until consciousness is being or is restored. Sometimes urination is followed by collapse and sometimes by erection of the dorsal pelage. This latter is a fatal sign.

Very fat animals are the worst subjects for anesthetization. Occasionally, almost immediately after the chloroform is inhaled or when the animal is recovering from its effects, the subject gives a long cry and takes a prolonged breath, advances its forelimbs stiffly, and throws back its head. These gasps become intermittent with a more or less long interval, the tongue and mucous membrane of the mouth are pallid but show large or distended purple veins, and the back of the throat is covered with a spumous or frothy mucus. Recourse should be had without delay to an intracardiac or intrathoracic injection of 1/400 to 1/200 grain of strychnine sulphate, the throat cleared of mucus and artificial respiration tried. Not infrequently this condition follows sneezing, especially when the efforts are intense. On the other hand, many cats sneeze without this serious happening. It is undoubtedly a reflex action and unless relieved may continue under artificial respiration for at least half an hour before death takes place. It does not occur when the animal is fully under the influence of the drug.

AFTER 50 years' experience with the use of various anesthetics for the cat I have come to the conclusion that chloroform inhalation, used with care and skill, is the quickest and most convenient agent for the production of anesthesia. As soon as it ceases, by withdrawal of the agent, the animal commences to regain consciousness and is, within half an hour, fit to be returned to its owner if desired. There is no more risk with it than with any other drug. It can be withdrawn at will, which is not the case with intravenous, subcutaneous, intrathoracic, intratracheal, or intraperitoneal injections of some of the hypnotic agents, which must be given in relatively large doses in order to anesthetize the animal, which takes a long time to recover from their effects.

THE greatest danger of chloroform is that one sometimes becomes too confident in consequence of its success in a long series of cases and hence one is not always

so careful as one should be in its continued administration. Experience is often fallacious, so that in the long run one is taught that judgment is difficult. In anesthesia of all animals one should be always on the lookout for what might occur or rather what will probably happen if care is relaxed. Unfortunately, wisdom comes late in life.

Why deaths from anesthetics are more frequent in veterinary practice than they are in human medical practice is a matter requiring examination. More than 10,000 human beings have been anesthetized by one administrator without a single death—Henry Gray, M. R. C. V. S., in *The Veterinary Record,* Vol. XIII, No. 10, March 11, 1933.

DO YOU REMEMBER?

1. Question. What is the one exception to the rule that serous cavities are normally closed cavities?

Answer. The peritoneal cavity of the female—due to the presence of an abdominal opening in the fimbriated extremity of the fallopian tubes.

2. Q. What is the theory of biological recapitulation?

A. Ontogeny recapitulates phylogeny—which means that the history of the race is summarized in the development of an individual. This is sometimes known as the law of biogenesis.

3. Q. What are the eight glands of internal secretions?

A. The glands of internal secretions are: the thymus, adrenals, pituitary or hypophysis cerebri, thyroid, parathyroid, perhaps the pineal body or epiphysis cerebri, possibly the spleen, and the placenta; glands which have both internal and external secretions are: the liver, stomach, intestine, pancreas, ovaries and the testes.

4. Q. What are the principal symptoms shown in a case of vitamin A deficiency?

A. Lack of growth, glandular inactivity, abscess formation, increased susceptibility to disease, zerophthalmia, and sterility—the two latter being due directly to glandular inactivity.

5. Q. When may the pasturing of sorghum result in prussic acid poisoning?

A. Second growth sorghum, or sorghum which has been stunted due to drouth or a recent frost may form prussic acid in the stomach of the animal eating it; less commonly, plants growing in very rich soil may be similarly dangerous. Cured sorghum or sorghum silage may be fed with safety.

In addition to the sorghums (both sweet and non-saccharine), some other plants which may poison by prussic acid after being stunted are kaffir, Johnson grass and sudan grass.

Cattle are the more commonly poisoned, sheep and horses being less susceptible, while hogs are usually safe on such pastures.

Wesley O. Keefer.

Ramsay, Mont.

According to Huddleston, a strain of *B. abortus* that had lost its pathogenicity for guinea pigs and cattle produced some degree of immunity.—Abs. *Bact.,* Vol. 9, No. 4.

CAN YOU ANSWER THESE QUESTIONS?

What is an effective method of breaking a horse or mule of halter pulling?

How can a mare be tied that her young foal will not get hung in the halter shank?

Is there a simple, inexpensive effective method of breaking a horse from kicking while hitched?

What does a horseman mean when he states that a certain horse is a "cold collar"?

What is the cause and treatment of "chest founder"?

Is "cross firing" a serious defect in a harness horse?

Is there an effective method of overcoming a "lugger"?

Is there any method of shoeing that will effectively overcome "winging"?

What is the cause and treatment for tongue lolling?

Fitch New President of The A. V. M. A.

THE 70th annual meeting of the American Veterinary Medical Association, held in Chicago, August 14-18, 1933, probably broke few if any records, but the majority of the visitors seemed to think the arrangements were such as to serve the comfort and convenience of those attending the meeting, and the program was undoubtedly one of the fullest and one of the most interesting yet presented at an A. V. M. A. meeting.

The registration did not quite reach 1400 and therefore was not equal to that of the Kansas City meeting two years ago. However, an unusual number failed to register at the secretary's desk; it being generally estimated that the attendance was at least 500 greater than the registration indicated.

The "World's Fair" just a few blocks away on the lake front proved a powerful attraction for convention visitors and a distracting influence on the meeting. It naturally lessened the attendance at some of the sessions. On the other hand, it was probably responsible for the presence in Chicago of a good many of those who put in a part of their time at the convention.

THE most important business matter considered by the meeting was the affiliation of state and provincial veterinary association with the national organization. It was reported that 35 of the state associations had completed arrangements for this affiliation and the constitution and by-laws of the A. V. M. A. were amended in accordance with the proposals at the Atlanta meeting, to provide for a House of Delegates consisting of a representative of each state association. Reports of special and standing committees, including the Executive Board will in the future, be made to the House of Delegates instead of to the association. This, it is thought, will relieve those in attendance at meetings from the necessity for spending time on routine matters and permit them to give their entire attention to the program.

The only change in the list of approved colleges was the omission of the Division of Veterinary Medicine, Georgia State College of Agriculture, which was discontinued at the close of the school year in June.

The papers presented at the meeting will of course be published later and need not be abstracted here. The next meeting will be held in New York City at the time of the XII International Veterinary Congress.

Clinic

THE clinic at this meeting was unique in that it was held in the same hotel and on the same floor that the remainder of the convention was held; a feature that probably was responsible for a larger attendance than at any previous clinic of this association.

The operations and demonstrations of the clinic too, were different from those usual at clinics. Within recent years the popularity of clinics in a number of state veterinary associations has increased materially and as a result, such clinics have been enlarged and improved. In addition to this, some district associations of the middle west, particularly the Eastern Iowa Veterinary Association (whose clinic was described in the August issue of VETERINARY MEDICINE, page 311) and the Mississippi Valley Veterinary Association (whose clinic was described in the September issue of VETERINARY MEDICINE, page VII) have been holding annual clinics at which no papers or discussions were presented, but the whole day given over to clinical instruction. These developments made it seem desirable to the clinic committee for the Chicago meeting to arrange for a clinic not of ordinary subjects, but

of unusual conditions and particularly a demonstration of new operations and methods of diagnosis and treatment. Judging by the interest of the veterinarians in attendance, the clinic committee was successful in arranging a clinic of this sort of absorbing practical interest.

Nothing like a complete description of

Arranging for Alumni Luncheons. The attendance at these luncheons was 470; the K. C. V. C. luncheon with 75 in attendance was largest.

all of the operations and demonstrations at the clinic can be given in the space at our disposal. Although the clinic was held on the 4th floor of a large hotel, two horses, three cows, several sheep, many dogs and 180 chickens were used in it.

IN THE equine clinic, Major F. B. Steinkolk of Chicago, demonstrated surgical treatment of hoof fractures and contractures. Glenn Ebright of Hammond, Indiana, demonstrated the surgical treatment of laminitis. Ashe Lockhart of Kansas City demonstrated immunization against tetanus.

Among other demonstrators at the equine clinic were L. N. Morin of McLean, Illinois, and E. R. Frank of Kansas.

IN THE cattle clinic, C. H. Case of Akron, Ohio, demonstrated the mastitis test that he has been using for some time in his practice with great success. The test consists in the usual mixing of brom-thymol solution with milk from a suspected quarter and its examination under the microscope. By making this test for his clients and advising them concerning their cows on a basis of the information revealed by the test, Doctor Case has succeeded in many instances in lowering the bacterial count of herd milk to an average of 400 to 500 organisms per cc. Such milk can be kept in the ordinary ice box for two weeks without souring and at the end of that time show a bacterial count of less than 3600. Doctor Case is a strenuous advocate of the advantages of raw milk over pasteurized milk as a food for children, but because of the difficulty of control does not advise raw milk for large cities.

T. H. Ferguson of Lake Geneva, Wisconsin, demonstrated intravenous injection in the cow, stomach lavage and epidural block. He regards the use of the stomach tube as much to be preferred to the use of a trocar in bloat and overloading and regards resorting to rumenotomy as but rarely necessary if the stomach tube is properly and persistently used.

He expressed himself as greatly pleased with the arrangements of the clinic and doubted if the A. V. M. A. would again find it possible to hold a clinic under circumstances and arrangements so convenient for those in attendance.

THE poultry clinic was extraordinarily complete. Nearly 200 birds were supplied for this clinic by the University of Illinois and among the number were birds suffering from pretty much every known disease of poultry. The demonstrations included caponizing, irrigation of the facial sinuses, anesthesia and anatomical demonstrations with of course, lesions and symptoms presented by the diseased birds, vaccination against chicken pox and laryngo-tracheitis. Judged by the number of veterinarians it attracted the poultry section was the most popular part of the clinic.

In discussing vaccination for laryngo-tracheitis, F. R. Beaudette of New Jersey recommended it in the following conditions:

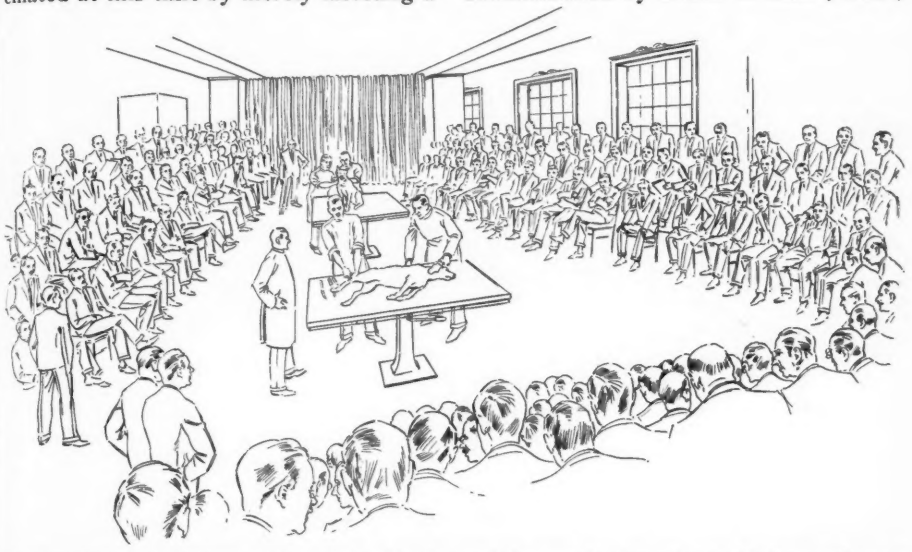
1. On farms where laryngo-tracheitis is enzootic.

2. Vaccination of susceptible birds coming onto a farm where the disease is enzootic.

3. Vaccination of unaffected units on farms where the disease has appeared.

4. Vaccination of birds on a new plant in a colony where the disease is known to exist.

Birds should be examined four or five days after vaccination for the presence of "takes." If the vaccination has been properly done, 95% or more of "takes" should be had. Birds which do not show a "take" at the time of examination may be revaccinated at this time by merely infecting a brush with the exudate in the cloaca of a bird which does show a "take." Birds between the ages of six weeks and four months are of an ideal age for vaccination, although in emergency cases these limits may be exceeded in both directions. Aside from the local reaction, the birds show no evidence of vaccination. Even in birds in heavy production, the loss in eggs is noticed for not more than two or three days and is insignificant.



The Small Animal Section of the Clinic. Just beyond the curtain shown in the background was a similar section for farm animals and beyond that the poultry section. More than a thousand chairs, arranged in tiers, were provided, and all were filled throughout the day of the clinic. No one was permitted to crowd upon the operating table and obstruct the view of others. Assistants to the clinicians were held down to a minimum—usually to one. The operation shown in the foreground was an amputation by Doctor Schlotthauer of the Mayo Foundation.

NEXT to poultry, the largest number of operations and demonstrations occurred in the small animal clinic. C. F. Schlotthauer of the Mayo Foundation, E. B. Dibbell of Baltimore, John R. Wells of Palm Beach, E. J. Frick and W. E. Jennings of Kansas, J. A. Campbell of Toronto, D. A. Eastman, T. B. Crow and L. A. Merillat of Illinois, R. A. Self of Texas and others officiated to the entire satisfaction of the assembled veterinarians.

A feature of this clinic greatly appreciated by the veterinarians present was a demonstration by Frank C. Mann, M.D., of the Mayo Foundation. Doctor Mann is one of the world's outstanding physiologists, he is secretary of the American Physiological Society and the Federation of American Societies for Experimental Biology. Last February he was awarded the William Wood Gerhard gold medal for outstanding work in physiology. Doctor Mann demonstrated the technic he uses in bowel surgery employing a modified Connell suture, description of which will be given later.

PERHAPS the outstanding feature of the sheep clinic was a demonstration by Prof. F. F. McKenzie of the University

of Missouri, of a method of measuring the fertility of lambs.

F. E. Stiles of Michigan demonstrated methods of medication in sheep, stating:

"The bane of the sheep industry is parasites, internal and external. The lambs shown at the clinic were to demonstrate the effect of stomach worms which cause them to grow slowly, with poor development of wool. Treatment is very simple; but it has to be repeated every six or eight weeks during the pasture season, because the animals are constantly reinfested.

"The *Strongulus contortus* or stomach worm is the most common parasite of sheep. This parasite is killed by the administration of a 1%-solution copper sulphate and nicotine sulphate.

"Sheep are the most sensitive patients with which a veterinarian has to deal; being very subject to shock but the lambs in clinic were not excited by the sight of the Palmer House and all the crowds.

"There has been a marked change in the sheep industry in the central western states in recent years. A great many small farm flocks are being developed. In the fall of the year, it is a common practice of farmers in southern Michigan to ship in larger numbers of feeder lambs, the bands ranging from 300 to 3,000. Change of climate and change of diet are factors that contribute to sickness. Southern Michigan and Northern Indiana feed great numbers of lambs for market purposes.

"Other parasites in lambs are tapeworms and lung worms. Lung-worm infestation is one form of parasitism that the profession at the present time is unable to treat satisfactorily. When lung-worm infestation occurs, we advise the farmer to market his flock as soon as possible.

"The most common trouble among feeder sheep is of dietary origin. Coming off range where the grass is dry and eating our moist grass affects them deleteriously.

"Sheep unlike other animals evidence no outward signs of pain. They may suffer the most severe pain and sickness without any external appearance of it. Horses roll and tumble and groan; cows paw and often bellow; dogs whine and bark; but sheep do not evidence any outward signs of pain. Diarrhea and bloat are often the only symptoms of disease or parasitism. However a close observer soon learns to detect trouble in a flock.

"The increased price of wool and the price of mutton in the market make sheep raising at the present time occupy a very enviable position in our scheme of animal husbandry.

"A small flock of sheep on the ordinary farm can be kept with very little additional expense because they consume food which no other animal would consume, weeds, waste plants and stubble, and thrive fairly well on it. Sheep are often spoken of as the golden hoof because they consume the poorest quality of grasses and rations and still leave the richest fertilizer on the ground.

Commercial Exhibits

AT NO previous meeting of the A. V. M. A. has there been so many or such elaborate exhibits by the supply houses and certainly at no other meeting has there been an equal opportunity afforded visitors to see these exhibits with so little inconvenience or loss of time. They were arranged in the same large hall with the registration desk and the clinic. In fact, it was the general rendezvous of visitors at the convention.

FIRST exhibits at this meeting included that of Pard Dog Food and Silver Fur Fox Food by Swift & Company, Ideal Dog Food by Wilson & Company, Miller's Dog Food by Battle Creek Dog Food Company, ultra violet apparatus for diathermy and for bloodless surgery by the Lapel High Frequency Laboratories, canine operating tables by E. J. Paider, Azamine and a number of azo-dyes, with indications for their use internally, intravenously and locally, by the Rare Chemicals Company and a mobile shock proof x-ray machine by the General Electric Company. This x-ray machine can be moved anywhere about a veterinary hospital and x-ray photographs taken where it is most convenient. A radiograph was taken at the small

animal clinic and developed and printed all within ten minutes and passed around for inspection while the subject was still before the clinic.

Among the old timers, Fort Dodge Laboratories had in the rear of their attractive exhibit the figure of a greyhound outlined in Neon lights that, flashing on and off, gave it the appearance of being on the race track chasing a mechanical rabbit.

Doctor Graham's absence from the elaborate exhibit of the Jensen-Salsbery Laboratories, explained by the serious illness of his son, was a disappointment to all.

Becton-Dickinson Company showed the most complete line of hypodermic syringes, needles, thermometers and blood transfusion apparatus heretofore shown at an A. V. M. A. meeting.

Chappel Brothers' exhibit showed their various packages of dog food and research and other literature stressing the advantages of horse meat as a food for dogs.

The Norden Laboratories' exhibit showed their usual complete line of veterinary supplies.

The Denver Chemical Manufacturing Company's exhibit featured Antiphlogistine and the attendants were more than liberal in dispensing samples of their well known product to visitors.

The exhibit of the Cutter Laboratories, in addition to showing a complete line of their products, attracted much attention by a moving picture that ran continuously showing animals in various stages of encephalomyelitis and also the preparation of their serum for the prevention and treatment of this disease.

The tremendous stock and large variety of instruments shown in the Haver-Glover Laboratories' exhibit would indicate that surgery is still very much a part of veterinary practice.

The fine booth of the Corn States Serum Company was rendered still more popular by the many chairs provided for visitors.

The exhibit of Ashe Lockhart, Inc., was surprising in its completeness.

The exhibit of the Abbott Laboratories contained a remarkable number of fine chemicals. An attractive feature in the background was an ocean scene showing where the material for the company's haliver oil is procured and how.

Shikles Brothers were both there and exceedingly busy demonstrating their superior equipment for administering antihog cholera serum and giving intravenous injections.

John Oster had a complete display of clipping machines for dogs and other animals.

Alexander Eger, the sole veterinary book publisher in this country, was there with a list of new and not so new veterinary texts.

Lederle Laboratories exhibit was confined to biologics.

Bard-Parker showed a complete line of surgical knives.

Educational Exhibits

THE educational exhibits, a new feature of A. V. M. A. meetings, afforded some of the most instructional material of the entire program. Among them was "Veterinary equipment of the 19th century," contributed by the Haver-Glover Service, Chicago.

It consisted of a crude, old-time veterinary chest. From its appearance it might have come out of the ark. On it were mortars, funnels, balances and graduates. Stacked on shelves at the side were many of the crude instruments used 50 years ago and a half dozen veterinary texts of that period.

THE Institute of American Meat Packers and National Live Stock and Meat Board had one of the most attractive of the educational exhibits. In fact, to a large extent, it was a duplicate of the same organization's exhibit at the World's Fair. Each visitor at the exhibit was given a recipe book "Meats for Every Occasion" which was greatly appreciated by the ladies.

THE exhibit of the State of Illinois, Department of Public Health, consisted of a series of maps and charts showing prevalence of rabies in Illinois and the distribution of anti-rabic treatment during

1932; also graphs and maps showing the prevalence of bovine and of human tuberculosis and the death rate of children under five years of age, and the progress of cattle testing from 1907 to 1931 inclusive.

AN EXHIBIT of remarkable value was that of the University of Minnesota, Mayo Foundation. It consisted of two large cases containing mounted specimens of tissue, one of sections of the eyes of horses affected with periodic ophthalmia and the other spondylitis of swine. The latter included In addition to 20 mounted specimens, a considerable number of x-ray prints. There was a full description of the disease and its public health significance.

In the exhibit of spondylitis in Swine, a specific brucellosis multiple, irregular abscessed cantations in body of vertebra were shown. Destruction of bone may occur which extends in irregular tortuous ramifications to the periosteum and may penetrate into overlying musculature with subsequent abscess formation surrounded by a tough fibrous capsule. Ventral surface lesions overlying exostosis in which ossification is often complete.

The significance of porcine brucellosis was further emphasized by placards in which it was stated that the virulence of the brucella organism had been demonstrated definitely by animal inoculation. It was further shown that undulant fever in man is not at all uncommon as a result of infection from swine. The exhibit was prepared by W. H. Feldman, C. Olson, Jr., and J. D. Coate, of the Foundation.

The periodic ophthalmia exhibit prepared by C. F. Schlotthauer contained ten specimens illustrating clearly and definitely the effect of recurrent ophthalmia. Comparisons were striking because of the fact that the normal structures of the eye were demonstrated as well as the abnormal. Various stages of development of periodic ophthalmia was shown such as bits of iris attached to the lens capsule, anemic infarcts in the choroid, systematic degeneration of the retina and fixation of the lens as it occurs in this malady. One specimen clearly demonstrated cataract a result of repeated attacks of recurrent ophthalmia. There was also shown an atrophy and detachment of the retina with progressive abolition of the fundus. Other specimens in which the cornea had been removed illustrated typical moon-blindness.

THE Horse Association of America had an exhibit consisting in the main, of photographs of large teams of from five to thirty horses, showing how they should be hitched. A unique part of this exhibit was a small model of six horses harnessed and hitched, showing fully the system of "tying in and bucking back," stressed so much by Dinsmore, and also the best arrangement for eveners.

THE exhibit of the Bureau of Animal Industry of the U. S. Department of Agriculture was elaborate. It consisted of 72 splendidly mounted specimens of pathologic tissue and 100 specimens of internal parasites in bottles. The Tuberculosis Eradication Division of the Bureau had the exhibit that has been shown widely at fairs and stock shows, having in the center colored maps showing the extent of bovine tuberculosis in the United States in 1922 and in 1933. At one side a hog was shown and on the other side of the maps a cow, in which lights flashed on and off showing the organs commonly affected by tuberculosis and their appearance when diseased.

The pathological specimens included a spleen showing infection with porcine brucellosis. The spleen was not enlarged and was not changed in color with the exception of several hundred small greyish yellow nodules ranging in size from pinheads to that of a split pea. The contents of these nodules was putty-like in consistency, grey in color. Cultures from this matter produced pure culture of *Br. suis* and there were no other noticeable lesions in the carcass.

Brucella infection of the vertebral column in the swine was shown. The lesions when found in vertebrae consist of broken down areas containing a greyish putty-like matter. These lesions are always found in between the vertebrae starting

at the nucleus pulposis. It is believed that the location of the necrotic area differentiates this infection from tuberculosis. In tuberculosis, the lesions always begin in the body of the vertebra, in brucellosis the primary lesion is outside the body of the vertebra but in time the infection extends into the vertebra.

Several specimens were shown of a comparatively rare type of tuberculosis—tuberculosis of the muscles. Muscle tuberculosis in cattle appears to be quite rare. When it occurs, it appears as dry caseous areas which contain some calcified particles and is located just over the fascia of the muscle. Tuberculous lesions in muscle tissue range in size from that of a pea to a walnut and even larger. In some cases they are found in considerable numbers in the subcutaneous muscles over the rump and extending down to the tip of the tail. In other cases the superficial muscles of the cervical and shoulder regions are involved and the nodules may extend down as low as the knee. A strange deviation of this form of tuberculosis is noted in that the internal organs are seldom extensively involved. If any of the internal organs are involved, the lesions will be noted in the mesentery lymph nodes.

A specimen of ossification of the lung of cow was also shown. Ossification of the lungs is a very rare condition. We are informed that perhaps it does not occur oftener than in one in 10 to 15 million animals. The changes seem to take place in the walls of the alveoli of the lung and may extend over one-half or three-quarters of the lung. The specimens consisted of true ossification containing a haversian system.

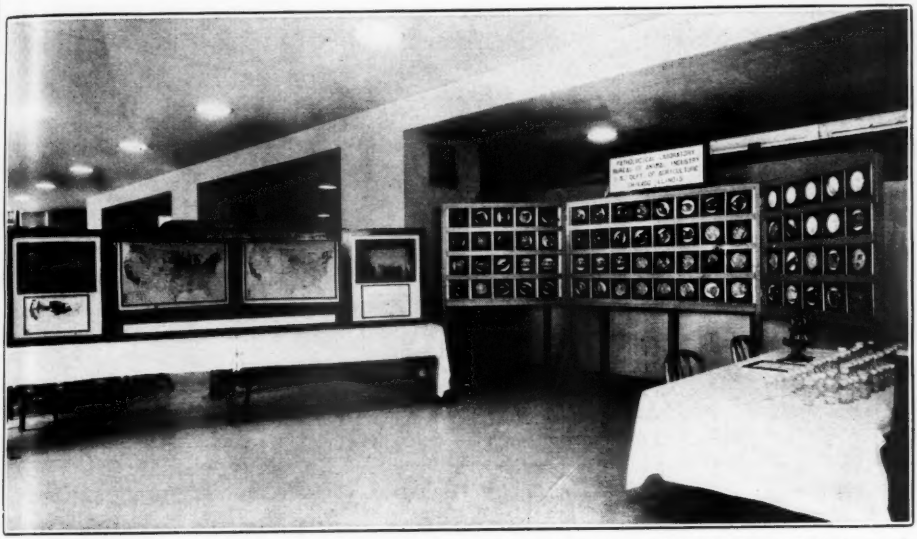


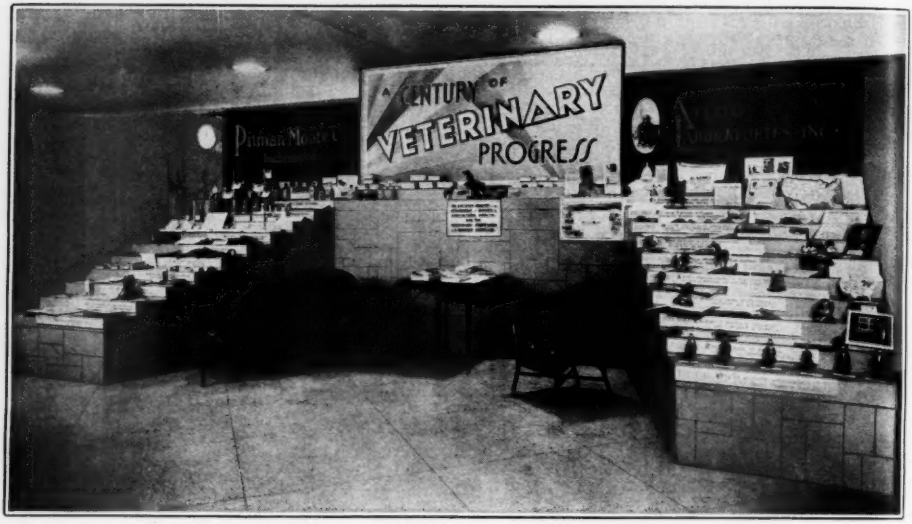
Exhibit of the Bureau of Animal Industry, United States Department of Agriculture, 70th Annual Meeting of the American Veterinary Medical Association, Chicago, August 14-18, 1933.

THE Pitman-Moore—Allied Laboratories exhibit exemplified "A Century of Progress in Veterinary Medicine." It was arranged in the shape of two wings rising by ten steps from almost the floor to the back of the booth, each step representing a period of ten years in progress of the veterinary profession in America.

The lowest step, 1833-1843 laid the foundation for the growth of veterinary science in America by showing statuettes or figurines, one for each of the six graduate veterinarians in the United States at that time. These veterinarians were: R. H.

Budd, C. C. Grice, R. H. Curtis, John Rose, C. Pilgrim and Alex. Lockhart. All but Rose were graduates of the London Veterinary College, and he, the first to come, was a graduate of the veterinary school in Berlin. These figures are dressed in tall silk hats, long coats and other conventional apparel of professional men of the time.

The second step, 1843-1853, contained cards descriptive of veterinary conditions in America: "No Veterinary Colleges," "No Veterinary Literature," "The bulk of practice in the hands of charlatans and ignoramuses, disreputable and dissolute. No qualified veterinarians except in the large cities and only a few there." In this decade Skinner's edition of Youatt's "On the Horse" was published, a valuable contribution to American veterinary literature.



A Century of Progress in Veterinary Medicine.

The third period, 1853-1863 contained busts of George H. Dadd, a self-educated man, and Alexander Liautard a graduate of a French school. Dadd was practicing in Boston through the greater part of this period, where he started two veterinary journals and was connected with a veterinary school, the Boston Veterinary Institute, established in 1855. During this period Dadd wrote two scientific works, one of which "The Modern Horse Doctor" achieved an extremely large distribution. Liautard graduated in 1856, came to New York City in 1860 and immediately established a large practice and became the recognized head of the profession in this country. In this same decade, The Boston Veterinary Association was established (1858). This later became the Massachusetts Veterinary Medical Association and as such, is the oldest of the state veterinary medical associations.

The fourth period, 1863-1873, was characterized by the establishment of four veterinary colleges: The Toronto Veterinary College (later the Ontario Veterinary College) established by Andrew Smith; the New York College of Veterinary Surgeons established by Busteed and with which Liautard was connected; the Montreal Veterinary College (later affiliated with McGill University) established by Duncan McEachran; and the Veterinary Institute of Chicago established by Dadd. The first three of these four schools acquired great influence in veterinary matters of this continent, graduating a large number of veterinarians. In this same decade, the United States Veterinary

Medical Association was organized (1863), which later became the A.V.M.A. During this period, for the first time, the medical profession officially recognized the existence and the utility of a science of veterinary medicine.

The fifth step, 1873-1883, contained sculptures of a beef steer, a dairy cow and a horse and contained such placards as this: "Before the widespread outbreaks of hog cholera which swept across the country year after year, the swine raisers were helpless." "Thayer in the Massachusetts outbreak of foot-and-mouth disease in 1870, demonstrated the value of veterinary supervision in the control of epizootics." "Contagious pleuro-pneumonia spreading from the serious outbreak of 1859 infected much of the country east of the Mississippi River, causing immense losses to cattle owners." "Glanders, which had decimated the horses of both armies during the last two years of the Civil War, had been thoroughly seeded over a great area due to the marching and contramarching of armies, and through the sale of condemned army animals to civilians had carried the infection to every city east of the Mississippi River and to most rural communities." "With the lifting of embargos at the close of the Civil War, the great herds of cattle of the southwest were driven north and east, carrying tick fever into hundreds of communities where it had never been known, attracting the attention of the Congress and most state legislatures and arousing whole communities to the point where they turned out to prevent southern cattle from being driven through their district by force of arms and some bloodshed resulted."

The sixth period 1883-1893, saw the organization of the Bureau of Animal Industry in the U. S. Department of Agriculture and was marked by a bust of Salmon, the first chief of the Bureau, and a splendid photograph of Mohler, the present chief. Many figures of animals depicting glanders, dourine, foot-and-mouth disease, tick fever, tuberculosis, contagious pleuropneumonia and scabies were shown. All of these diseases were prevalent and many of them panzootic at the time. Systematic official attempts at their control under veterinary supervision was just beginning to be made.

The seventh period, 1893-1903 shows a period of state recognition of veterinary science. In this decade, Pennsylvania, New Hampshire, Massachusetts, New Jersey and Ohio enacted veterinary practice laws. Illinois established a veterinary department and a veterinarian with the title of "State Veterinarian" at its head, the first state to do so, although Thayer of Massachusetts had served pretty much in this capacity in his state since 1859. Wyoming created the office of state veterinarian, providing in the law that appointees to the office should be graduates in veterinary medicine, the first state to make this requirement for this office.

The eighth period, 1903-1913 was marked by a great refinement in the therapeutic armamentarium of the veterinarian. Research in nutrition taught much concerning the feeding of farm animals and farm sanitation was for the first time, being stressed as a necessity in the production of live stock.

The ninth period, 1913-1923 of course, included the period of the World War and the most prominent exhibit was a soldier on horseback bearing a flag. Veterinarians to the number of 2313 were commissioned in the American army. Beginning in 1914, leading farm publications carried advertisements calling the attention of their readers to the value of veterinary science to the agricultural industry and to the fact that veterinarians differ, and that from graduates alone might live stock owners expect an efficient service.

During this period the number of veterinary colleges reached the maximum in this country and the number of students graduated annually was much greater than ever before or than it has been since.

The left wing of the exhibit showed on the first step, 1833-1843, early veterinary literature including Farriery by Vial De St. Bel, founder of the London Veterinary College (1792) and a very old work by

Gervase Markham published in 1651, 14 years after the death of Markham.

On the second step, 1843-1853 crude drugs and a fleam were shown. On a bottle of crude drugs it was explained that the particular drug gathered in one phase of the moon was a cathartic, in another phase an emetic and at still another phase, a diuretic. A jar of powdered glass was shown with the explanation it was to be poured in the right ear for diseases of the left eye, and in the left ear for diseases of the right eye. The card accompanying the fleam read: "The ever-ready fleam was indispensable. The lame, the halt and the blind were bled copiously—and even the well to keep them so."

The third step, 1853-1863, contained such interesting articles as a standard treatment for wolf in the tail (salt and pepper), a specific treatment for hollow horn (a gimlet and a bottle of turpentine), a substitute for lost cud (a rag and bacon rind), a shovel with a placard: "A large shovel heated to a dull red was applied to the ventral and lateral surfaces of the abdomen for colic," and an enormous Seton needle 18 inches long and of the circumference of a finger, with the explanation: "Rowells and Setons were placed in the sensitive sole for lameness, in the coronet for founder, in the shoulder for swinney, in the face for moon blindness, in the brisket to draw the matter out of the blood and pretty near anywhere else just to be doing something."

The fourth step, 1863-1873, contained samples of 31 drugs supplied the army for the treatment of its animals.

The next step, 1873-1883, showed crude instruments mostly blacksmith made.

The sixth step, 1883-1893, contained busts of Pasteur and of Koch, and samples of biologic products developed as a result of the discoveries of these pioneers.

The next step, 1893-1903, showed the means of assaying and standardizing pharmaceuticals and biologic products.

The following step, 1903-1913, and the two that succeeded that, showed a complete list of veterinary biologics and the most important combinations of organic and inorganic drugs used in the present-day prevention and treatment of diseases of animals.

Banquet

THE banquet will prove a memorable one in the annals of the A. V. M. A., first because it began on time and was actually concluded in two and one-half hours, and second, because of the historical significance of the presentation of medals to Drs. Cooper Curtis and Fred Kilbourne commemorating their part in the discovery that Texas fever is a tick-borne disease. The presentation of these medals was made by H. D. Bergman, who is just about inevitable when the selection of a toastmaster for an A. V. M. A. banquet comes up.

In addition to the usual entertainment provided on such occasions to prevent the banqueters from noting any deficiency in vitamins or other part of the pabulum provided, all were delightfully entertained by piano solos by Miss Marion Jaffray, daughter of Dr. and Mrs. John B. Jaffray of Chicago.

Election

THERE was a spirited, but good natured contest, for the office of president, C. P. Fitch of the University of Minnesota and J. S. Koen of the Health Department of St. Louis being the nominees. The former won by a comfortable majority.

THE new president was born in New York State July 1, 1884. He received his Bachelor of Science degree from Hamilton College in 1906 and his M.S. from the same school in 1909. He received his D.V.M. from New York State Veterinary College, at Cornell University, in 1911, in which institution he was assistant in bacteriology 1909-11; instructor in bacteriology 1911-13; assistant professor 1914-16; and professor in 1916-17. He went to the University of Minnesota in 1917 as Chief of the Division of Veterinary Medicine, which position he has since held.

He has long been active in the A. V. M. A. and of recent years a member of the Executive Board.

Abstracts

ACTION OF EXPECTORANTS

Gordonoff,[1] investigating the physiological and pharmacodynamic mechanism of expectoration by the use of Roentgen rays, observed that the expectorants act upon the secretion either in the sense of promoting its resolution, or in the sense of promoting its expulsion. Consequently, he proposes to classify the expectorants into two groups which he designates secretolytics and secretomotorics respectively. The action of the drugs promoting expulsion of the secretion is really due to stimulating effects upon the respiratory center. Thus, all the respiratory stimulants, such as lobeline, caffeine, etc., are incidentally secretomotory agents. Speaking about caffeine, one of its principal functions is the correction of circulation. All drugs correcting the circulation act simultaneously upon the vascularisation of the lung. Now in the case of venous congestion of the lung which, usually, is met with in diseases of the heart, there is no better remedy to combat a complication with bronchitis, than digitalis. The older textbooks on pharmacology were correct in including camphor, scilla, (squill), and related drugs among the expectorants.

The mechanism for expulsion consists of the undulating movement of the cilia of the epithelial lining. Gordonoff was able to prove that this is merely an auxiliary function. As a matter of fact, deeper down in the respiratory tract, in the bronchioles, the ciliated columnar epithelium gives way to a cuboidal or flattened, nonciliated epithelium. Another point to consider is that the energy of the cells varies under different conditions. With an increase in temperature their energy decreases. Usually, the patient with a fever has a furred throat. Indeed, in infectious diseases, the lining of the throat is seen to be coated with a layer of mucus. The ciliated epithelium becomes entangled in this mucus, and the cilia either cease moving or move aimlessly, and this at the critical moment when their activity would be most needed. Likewise, the energy of the cough decreases in the direction toward the smaller bronchi and the bronchioles. In view of the fact that the bronchioles do not possess ciliary epithelium, it is evident that no expectoration can take place in the alveoli and in the bronchioles. Nevertheless, the alveoli participate very energetically in the mechanism of expectoration. Formerly it was thought that this was due to a muscular movement corresponding to peristalsis. Roentgenological observation, however, revealed the fact that the main rôle in expectoration is played by the respiration. During respiration the bronchi undergo a jerking motion and chafe against each other, producing in effect a bronchial massage. The contrasting matter, placed into the bronchi, is seen to be in constant motion during respiration. It may, therefore, be assumed that the secretomotory function of the lung depends solely upon the respiratory activity. The alveolus too, in a like manner subject to the influence of respiration, has a special function in that it is capable of absorption. The school of Aschoff rightly speaks of the selfpurification of the alveolus.

The most efficient secretomotory drug was found to be ammonium chloride. It also possesses a weak secretolytical action. Ammonium chloride has not only an acid reaction, but it also produces an acidosis. For this reason it is recommended for the acidulation of the blood. Evidently, as the result of the acidosis, the respiratory center becomes irritated, whereby respiratory activity is facilitated.

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[1]Gordonoff, T. 1933. Die Expektoration und die Expectorantien. (Expectoration and the drugs promoting it.) *Archiv der Pharmazie* 271 (6); 382-387. Abst. by F. Volkmar.

Other secretomotory remedies are guaiacol and preparations of thymol.

The secretolytics are remedies which act upon the secretion by rendering it soluble. The most efficient remedy in this group proved to be the ether. Of purely secretolytical action, without any secretomotory component, is the potassium iodide. The saponins too qualify as secretolytics. They act not only per os, but also when given per rectum. Sulphur has a weak secretolytical action in that it stimulates the bronchial glands to secretion. The sugars may be mentioned here too; the most efficient of them are the cane-sugar and the malt-sugar.

Gordonoff concludes that it is silly to add respiratory depressants, such as morphine or codeine, to the expectorants, because the promotion of the respiratory activity is of utmost importance for a successful expectoration.

VACCINES IN BANG'S DISEASE

W. E. Cotton, J. M. Buck and H. E. Smith of the Federal Bureau of Animal Industry, in an investigation to determine the efficacy of an avirulent strain of Brucella abortus for vaccinating pregnant cattle against abortion disease, reached the following conclusions, reported in the *Journal of Agricultural Research:*

The strain of *Brucella abortus* used for the vaccines was isolated in 1915 from the milk of an infected cow and had undergone from 182 to 193 transfers on artificial culture media when the vaccines were prepared.

Inoculation tests showed the strain, designated as No. 801, to be nonpathogenic for cattle and guinea pigs. The agglutinating value of the strain, however, was not impaired.

From one to two months after vaccination 10 experiment animals were exposed to virulent strains of *Brucella abortus;* 9 other animals were used as controls.

The vaccines gave evidence of conferring immunity against abortion disease to 40 per cent of the vaccinated animals; only 11 per cent of the control animals resisted the disease.

No evidence was obtained to indicate that the strain becomes localized in the udders of vaccinated animals.

PROGRESS IN STUDIES OF DISEASES IN GAME BIRDS

Progress in studies of upland-game-bird diseases was reported at the American Veterinary Medical Association annual meeting held in Chicago from August 14 to 18, by J. E. Shillinger of the Bureau of Biological Survey, U. S. Department of Agriculture. Losses in some species of game birds in recent years have more than offset reproduction, said Doctor Shillinger, and through disease studies the Biological Survey is aiding in the propagation of quail, pheasants, grouse, and other birds on game farms.

Presenting a paper of which L. C. Morley, also of the Biological Survey, is joint author, Doctor Shillinger discussed the variety of test birds used in bureau experiments in transmitting ulcerative enteritis in quail, grouse, and other game birds. This disease, he reported, often wipes out a large part of the stock on game-bird farms, young birds sometimes dying within 48 hours after contact with a virulent strain of the infectious agent. The causative organism, he said, has not yet been grown in the laboratory in pure cultures, but postmortem studies indicate that it is a toxin producer as well as a cause of ulcer formation in the digestive tract.

The paper described a back-yard laboratory maintained by Doctor Morley at his home in Richmond, Va. Here Doctor Morley keeps watch of nesting birds, eggs during incubation, young birds in an electric brooder, and their growth in a developing pen.

Several States and institutions have offered to cooperate in these studies, said Dr. Shillinger, and some have supplied funds and experimental equipment.